Breeding for the 21st century

DEERSelect is a hugely important development for the New Zealand deer industry. It provides opportunities for continuous improvements in on-farm productivity that are taken for granted in competing industries, but which have only been available to a few deer breeders prepared to pay for a personal service.

Providing an industry-specific genetic improvement system is a costly exercise, but DEERSelect has piggy-backed on developments from the sheep industry and, as a result, has access to state-of-the-art genetic analysis technologies. The special features incorporated in it, that allow deer genetics to be analysed, have been developed over years of work through AgResearch's FRST deer genetics research programme. Independent bureaux service breeders by processing their data and adding it to the DEERSelect database and by requesting updated genetic evaluations using the software (the genetic engine) that DEERSelect provides.

The genetic advantage

Every successful industry has a continuous improvement philosophy. Competition for land use in New Zealand means that the deer industry has to deliver annual increases in on-farm productivity to remain competitive. One of the most widely recognised continuous improvement strategies is genetic improvement. This involves the identification of genetically superior animals so that they can be used in breeding programmes to produce progeny with higher productivity. That higher productivity is fixed in the genetic makeup of animals and is passed on to the next generation. In other words, ***genetic improvement is permanent and cumulative***. Equally, bad selection decisions can reduce productivity and those decisions are also permanent.

The technology used by DEERSelect has had a huge influence on productivity in virtually all commercial livestock production systems in New Zealand and internationally. Some examples are given below. There are differences in how the systems are applied but the genetic evaluation technologies are identical.

Dairy: The dairy industry estimates that genetic improvement accounts for 60% of on-farm productivity increases.

Sheep: Sheep Improvement Ltd estimates that genetic improvement accounts for 40% of on-farm productivity increases.

Beef: Breedplan is the dominant provider of genetic evaluations for the beef industry.

In addition, genetic analysis is crucial to developments in many other industries, e.g. pigs and poultry.

Selected traits

DEERSelect focuses on traits of economic importance. At present these include ***growth*** and ***velvet***. In future, additional traits will be added to provide more accurate measures of total on-farm profitability.

Growth is split into several traits:

- Weaning weight (WWT) compares the weight of calves at weaning.
- Yearling weight (W12) compares the weight of animals in spring i.e. the critical time for venison production. The values are expressed in kg liveweight. For venison production, this is the trait deer farmers are paid on, so should receive significant emphasis if purchasing genetics for venison.
- Mature (adult) weight (MWT) compares the mature weight of hinds (i.e. 3+ years). Again, the values are expressed in kg liveweight. This trait is economically important for both venison and velvet production, as it is an indicator of how much feed is required to maintain an adult animal. Although it is expressed on a breeding hind basis, it is closely related to mature weight of adult stags as well.

Velvet has a single trait:

- Mature velvet weight (MVWT) compares the weight of velvet produced by a mature velveting stag – values are expressed as kg of velvet cut at optimal time. The MVWBV is a significant driver of velvet profitability and should be considered along with likely impacts on velvet grade when comparing animals.

On farm recording

Accurate genetic analysis starts with the collection of accurate information. Results can be generated with inaccurate information but they can never be better than the quality of information provided. Accurate genetic analysis requires the following records:

Identification: All animals need to be uniquely identified. This takes the form of a DEERSelect herd number, individual tag number and the year of birth.

Pedigree: Accurate identification of sire and dam, collected at calving or by DNA parentage analysis. DEERSelect recommends DNA parentage.

Date of birth: Recorded at calving or assessed by pregnancy scanning and foetal aging.

Weaning weight: Weaning weight of calves and weighing date, including management mob.

Autumn weight: The weight of calves in June and weighing date, including management mob.

Yearling weight: The weight recorded at 9 – 12 months of age, date and management mob.

Mature weight: The weight of adult deer, preferably hinds at weaning, date and management mob.

Velvet weight: The weight and grade of velvet cut at optimal time, and cutting date.

Reports

DEERSelect can produce national across-herd comparisons, provided your herd is adequately 'linked' to the national breeding herd. This allows national comparison of deer genetics. Sire summaries from herds participating in the national comparisons will be published annually in December (in *Deer Industry News*), and at 3-month intervals on the DEEResearch website. Individual breeders can request an updated report on their herd at any time – this report contains information on sires used in your herd, as well as your recorded hinds and offspring. Breeders not able to participate in across-herd analysis are able to receive the same reports calculated on a within-herd basis.

What are breeding values?

All genetic selection aims to increase performance and productivity. Geneticists call this the ***phenotype*** – what we actually see and measure when we look at an animal. However, phenotype is affected by a lot of things apart from genetics so we often find that animals don't breed as well as expected or that some breed better than expected. This is explained in genetic terms as:

Phenotype = genotype + environment

In simple terms, this means that what we see when we look at an animal is a combination of its genetic makeup and how it has been managed. Genotype is the only part that is passed on to an animal's progeny and is therefore the only part we are interested in when selecting our breeding stock. DEERSelect is designed to remove the environmental 'noise' and provide us with the best estimate of the genotype of an animal. This is termed genetic merit and is referred to as breeding values (BVs).

BVs are expressed in units of production (kg of liveweight or velvet), so are directly related to expected impacts on performance. A fawn gets half of its genes from the stag and the other half from the hind. So, if we had the choice of 2 stags, with 12-month weight BVs of +12 kg and +8 kg, the first stag will pass on an impact of +6 kg to his offspring, while the second will pass on +4 kg. Thus we would expect the offspring of the +12 stag to be 2 kg heavier at 12 months of age than those of the +8 stag (i.e. half of the difference in BV).

Using breeding values

The important BVs for stag selection are:

W12BV: The breeding value for 12 month weight, in kg compares the weight of animals in spring i.e. the critical time for venison production. For venison production, this is the trait deer farmers are paid on so should receive significant emphasis if purchasing genetics for venison.

MWTBV: The breeding value for mature weight, in kg compares the mature weight of hinds (i.e. 3+ years). This trait is economically important for both venison and velvet production, as it is an indicator of how much feed is required to maintain an adult animal. Although it is expressed on a breeding hind basis, it is closely related to mature weight of adult stags as well.

Velvet production genetics should look for low or moderate mature weight, combined with excellent velvet genetics. This will maximise the profit per hectare of your velvet enterprise by producing more velvet per stag and running stags at higher stocking rates. For venison production, mature weight is related to 12-month weight. This means that if genetics are sought to breed replacement hinds, 12-month weight needs to be balanced with the mature weight to keep hind size (and hence feed costs) at an appropriate level. There may be considerations with handling ability too, depending on your individual preference. Mature weight is not economically important for terminal sires (concentrate on 12-month weight).

MVWBV: The breeding value for mature velvet weight in kg compares the weight of velvet produced by a mature velveting stag, expressed as kg of velvet cut at the optimal time. The MVWBV is a significant driver of velvet profitability and should be considered along with likely impacts on velvet grade when comparing animals.

Accuracy (Acc%)

BVs are always an estimate – we can never know the true breeding value of an animal. However, the more information we have, the more confident we are that the BV we calculate is accurate and close to the true breeding value. 'Acc%' is an indication of how confident we are in the accuracy of the *estimated* Breeding Value. BVs with accuracies of 80%+ are excellent indications of true breeding value, and are unlikely to change significantly if we had more information. BVs with accuracies of 60-80% are moderate indicators of true breeding value – adding more information may cause some changes in breeding value estimates. BVs with accuracies less than 60% are unreliable indicators of breeding value, and may change significantly with additional information.

[Note: DEERSelect has agreed that it will only publish accuracy figures when there is sufficient data above to confirm an accuracy above 60%. If there is no accuracy data, the BV should be interpreted with some caution.]

Explanation of DEERSelect's Sire Summary

The sire summary produced below is a list of sire breeding values resulting from a single analysis of information from 20 herds located around New Zealand. This analysis enables the genetic performance of the sires used in these herds (along with all other hinds and calves in the herds) to be compared on the same basis, after differences in environment have been removed.

To appear on the list a stag must have a minimum of 5 progeny performance recorded in one or more of the participating herds, and have been used in the last 2 years (i.e. progeny born in 2003 or 2004). The information is presented in two lists to facilitate comparisons within breed types – one for pure English sire stags and one for European and composite stags. However, as information from both lists was derived from a single analysis, the breeding values are directly comparable between the two lists.

The information presented is for growth only, with the traits reported being weight at 12 months and mature weight of hinds. An across-herd analysis for velvet will be available in March 2006. Other traits will be added as DEERSelect is developed and research information becomes available.

Participating herds

The information on this list is based on the records collected at the participating herds. These herds include:

- Bennet
- Black Forest Park Clinton
- Black Forest Park Outram
- Canterbury Imported Red Deer
- Deer Improvement Ltd
- Doncaster Deer Partnership
- Fairlight
- Foveran Deer Stud
- Hurunui Red Deer Stud
- Invermay
- Landcorp Goudies
- Landcorp Keri Downs
- Landcorp Rangitaiki
- Landcorp Stuart
- Landcorp Weka
- Landcorp Woodstock
- Netherdale Deer
- Peel Forest Estate
- Remarkables Park Deer Farm
- Stanfield's Bushey Park Eastern
- Stanfield's Bushey Park English
- Taihape Red Deer

Stags bred at other herds appear on the list, as they have been used as sires by the participating herds. These stags have been selected from these herds, and are not necessarily representative of the genetics of the original herd.

For more information contact:

DEERSelect

Jason Archer: phone 03 489 9138, fax 03 489 9038, mobile 029 489 9138, jason.archer@agresearch.co.nz

George Cruickshank: phone 027 224 5628, fax 06 874 8703, george@genequest.co.nz

Genetic Gains bureau

Julia Aspinall. phone 03 216 3455 fax 03 216 3405, Julia@genetic-gains.co.nz • www.genetic-gains.co.nz

NZ Performance Recording Services bureau

Ken Moore. phone 03 338 8078 fax 03 338 7823, kenmoore@paradise.net.nz • www.nzprs.co.nz

English Stags

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Beaufort Lodge	13/95	BFL13	44/147	**-9.5**	*95*	**-3.8**	*81*	Taihape Red Deer
Beaufort Lodge	142/98	RYAN	59/86	**1.9**	*94*	**0.6**	*78*	Peel Forest Estate
Beaufort Lodge	167/96	CALIGULA	16/88	**2.2**	*93*	**-0.3**	*75*	Taihape Red Deer
Beaufort Lodge	95019/95	GLADIATOR	6/23	**1.3**	*85*	**-0.4**	*69*	Peel Forest Estate
Beaufort Lodge	P50/94	P50	40/320	**-0.1**	*97*	**-0.9**	*88*	Netherdale Deer
Stanfield English	98Y250/98	ATLANTIS	87/172	**1.3**	*95*	**1.6**	*87*	Black Forest Park
Canterbury Imp Red Deer	00412/00	SIR PETER	8	**-1.6**	*81*	**-1.2**	*67*	Canterbury Imp Red Deer
Canterbury Imp Red Deer	96053/96	THOMAS ALBERT	83/180	**5**	*93*	**4.1**	*83*	Canterbury Imp Red Deer
Cranbrook Park	Y9230/99	Y9230	6/11	**-3.7**	*73*	**-2.5**	*59*	Cranbrook Park
Love Red Deer Stud	NO 5/91	NO 5	31	**1.3**	*88*	**0**	*68*	Peel Forest Estate
Love Red Deer Stud	R15/94	CARBINE	16	**-0.9**	*82*	**-1.6**	*65*	Love Red Deer Stud
Netherdale Deer	YO15/95	BRAVEHEART	19/252	**-5.4**	*97*	**-1.8**	*88*	Netherdale Deer
Netherdale Deer	YP162/97	YP162	52/195	**-9.6**	*96*	**-4.7**	*87*	Netherdale Deer
Peel Forest Estate	01037/01	01037	16	**1.3**	*86*	**-1.6**	*70*	Peel Forest Estate
Peel Forest Estate	01101/01	01101	9	**0.3**	*84*	**-3.1**	*71*	Peel Forest Estate
Peel Forest Estate	01369/01	01369	7	**2.8**	*82*	**-1.7**	*70*	Peel Forest Estate
Peel Forest Estate	200/91	JAMIESON	15/314	**-3**	*98*	**-5.4**	*91*	Peel Forest Estate
Peel Forest Estate	75039/82	BRIAN	1/196	**-3.5**	*96*	**-1.3**	*86*	Peel Forest Estate
Peel Forest Estate	96001/96	MAJOR PEEL	15/185	**-3.2**	*96*	**-1.2**	*87*	Peel Forest Estate
Peel Forest Estate	96026/96	CHANCELLOR PEEL	108/328	**-5.9**	*98*	**-6.1**	*93*	Peel Forest Estate
Pelorus Deer	18/99	18	52	**3.5**	*88*	**4**	*74*	Foveran Deer Stud
Pelorus Deer	45/99	45	33	**0.1**	*78*	**-1.1**	*59*	Foveran Deer Stud
Pelorus Deer	9829/98	TOBY	47/86	**9.7**	*95*	**4.1**	*82*	Peel Forest Estate
Pelorus Deer	9838/98	MAC	8/39	**3**	*89*	**1.8**	*72*	Peel Forest Estate
Rata Hill	SULTAN/92	SULTAN	4/57	**1.2**	*92*	**-0.4**	*80*	Rata Hill
Stanfield English	001002/00	MOUNTBATTEN	39/40	**-6.1**	*82*	**-4.6**	*67*	Foveran Deer Stud
Stanfield English	001428/00	DUKE	57	**-10.8**	*91*	**-8.3**	*73*	Taihape Red Deer
Stanfield English	010450/01	010450	30	**-7.4**	*73*	**-4.4**	*51*	Foveran Deer Stud
Stanfield English	93002/93	LANCELOT	56/293	**-5.6**	*97*	**-11.1**	*90*	Stanfield English
Stanfield English	97038/97	HOTSPUR	37/102	**1.9**	*94*	**0**	*82*	Stanfield English
Woburn Abbey	97180/97	HASTINGS	14/49	**0**	*89*	**1.6**	*75*	Cranbrook Park
Stanfield English	98024/98	ANDREW III	74/123	**1.1**	*95*	**5.1**	*82*	Stanfield English
Stanfield English	99082/99	HENRY JAMES	41/64	**7**	*90*	**1.7**	*78*	Foveran Deer Stud
Stanfield English	001030/00	MERLIN	100	**5.2**	*94*	**5.1**	*79*	Stanfield English
Woburn Abbey	001406/00	HERBRAND	29	**0.8**	*88*	**-0.3**	*75*	Woburn Abbey
Stanfield English	011440/01	ARAGORN	29	**7.3**	*89*	**3.8**	*75*	Stanfield English
Stanfield English	95068/95	CLIVE	29	**9.8**	*88*	**9.4**	*75*	Pelorus Deer
Woburn Abbey	96026/96	ENDSLEIGH	47	**-5.1**	*90*	**-4.1**	*75*	Woburn Abbey
Stanfield English	99018/99	WILLIAM JOHN	130/152	**1.3**	*92*	**0.6**	*79*	Foveran Deer Stud
Stirling Deer Stud	85/197	TERRY	7/116	**-8.1**	*94*	**-12.3**	*88*	Stanfield/West Bush Deer Stud
Taihape Red Deer	112/97	KING JOHN	28/83	**-6.6**	*93*	**-6**	*74*	Taihape Red Deer
Taihape Red Deer	76/97	76	76/153	**-7.1**	*96*	**-5**	*81*	Taihape Red Deer
Tower Farms	PACQUIN/95	PACQUIN	15	**3.5**	*78*	**1.4**	*59*	Tower Farms
Warnham Park	92450/92	CHARLES RUPERT	13/232	**3.1**	*97*	**1.5**	*91*	Stanfield/Sarnia
Warnham Park	201Y/96	IVANHOE	45/165	**7.7**	*95*	**3.7**	*77*	Deer Improvement
Stanfield English	98260/98	HERMES	33/61	**-4.5**	*91*	**-4.9**	*77*	Stanfield/Mt Cecil
West Bush Deer Stud	108/93	108/93	8	**-2.5**	*59*	**-2.1**	*41*	West Bush Deer Stud
West Bush Deer Stud	BROCK	BROCK	4/6	**-1.6**	*58*	**-1.5**	*51*	West Bush Deer Stud
Windermere Red Deer Farm	295/90	HARVEY	18/26	**5.2**	*84*	**0.8**	*70*	Windermere Red Deer Farm
Windermere Red Deer Farm	934/99	TRAVIS	12/17	**-2**	*75*	**-1.5**	*57*	Windermere Red Deer Farm
Windermere Red Deer Farm	M932/99	COMMODORE	10	**-4.6**	*70*	**-3**	*54*	Canterbury Imp Red Deer
Windermere Red Deer Farm	Y751/97	MCLEOD	13/14	**-3.8**	*70*	**-3.3**	*53*	Windermere Red Deer Farm
Woburn Abbey	94/11A	BEDFORD	21/80	**-13.4**	*92*	**-11**	*83*	Woburn Abbey

Highlighted stags are in the top ten percent for W12 BV for each sire breed type list.

European and Composite Stags

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Arawata Deer Stud	218/95	MAGNUM	1/30	**-3.2**	*74*	**-2.1**	*57*	Arawata Deer Stud
Arawata Deer Stud	491/99	Y491	24/44	**2.8**	*80*	**2.8**	*62*	Invermay
Australia	203 O/96	203 O	42/128	**4.8**	*96*	**2.5**	*82*	Peel Forest Estate
Beaufort Lodge	100/95	REMBRANDT	18	**3**	*79*	**0.7**	*60*	Tower Farms
Beaufort Lodge	103/01	103/01	9	**-1.6**	*70*	**-1.5**	*54*	Beaufort Lodge
Beaufort Lodge	G009/93	ADONIS	52/127	**1.3**	*96*	**0.1**	*85*	Deer Genetics NZ
Beaufort Lodge	P4/94	RED BARON	148/169	**-2.3**	*94*	**-2.8**	*79*	Foveran Deer Stud
Beaufort Lodge	YP320/97	MAXIMUS	192/439	**6**	*96*	**2.6**	*86*	Netherdale Deer
Black Forest Park	00P366/00	00P366	23	**-10**	*85*	**-4.7**	*74*	Black Forest Park
Black Forest Park	00P400/00	00P400	18	**9.7**	*87*	**4.6**	*75*	Peel Forest Estate
Black Forest Park	00P402/00	KUTANA	61	**11**	*93*	**7.6**	*80*	Black Forest Park
Black Forest Park	00P403/00	00P403	28	**2.4**	*87*	**1.7**	*74*	Black Forest Park
Black Forest Park	00P412/00	RINGO	84	**4.6**	*88*	**-0.3**	*75*	Black Forest Park
Black Forest Park	00P862/00	COBANA	21	**2**	*76*	**-0.4**	*61*	Black Forest Park
Black Forest Park	00Y079/00	MIDAS DG	12	**-3.4**	*86*	**-2.9**	*76*	Deer Genetics NZ
Black Forest Park	00Y083/00	SALVADOR	99	**5.5**	*92*	**1.9**	*81*	Black Forest Park
Black Forest Park	01P452/01	LEGACY	59	**1.8**	*92*	**1.9**	*77*	Deer Improvement
Black Forest Park	01P466/01	TERKA	50	**9.3**	*91*	**9.1**	*80*	Black Forest Park
Black Forest Park	01P471/01	ALPHA	29	**14.5**	*90*	**12.5**	*77*	Deer Improvement
Black Forest Park	01P479/01	OPAL	29	**-7.1**	*88*	**-3.7**	*74*	Black Forest Park
Black Forest Park	01P484/01	ACE	36	**3.5**	*90*	**2.8**	*78*	Deer Improvement
Black Forest Park	01P776/01	01P776	27	**7.5**	*90*	**6.9**	*78*	Black Forest Park
Black Forest Park	01R364/01	SHIRAZ	39	**14.7**	*91*	**17**	*78*	Black Forest Park
Black Forest Park	01Y660/01	MIDNIGHT	32	**0.4**	*90*	**-1.7**	*78*	Deer Improvement
Black Forest Park	01Y670/01	LOGAN	23	**3.8**	*89*	**1.2**	*79*	Black Forest Park
Black Forest Park	01Y675/01	BLUEMOON	33	**4.9**	*90*	**1.1**	*79*	Deer Improvement
Black Forest Park	02P162/02	KURGAN	6	**22.8**	*83*	**20**	*73*	Black Forest Park
Black Forest Park	02P707/02	YEAGAN	28	**16.7**	*84*	**13.7**	*75*	Black Forest Park
Black Forest Park	752/01	BFP752/01	21	**4.4**	*86*	**4**	*75*	Taihape Red Deer
Black Forest Park	89B016/89	RAZIM	3/23	**7.5**	*65*	**2.4**	*57*	Black Forest Park
Black Forest Park	94BY486/94	BY486	29/235	**1**	*96*	**2**	*82*	Invermay
Black Forest Park	94O600/94	NESKEY	99/360	**9.9**	*98*	**1.9**	*94*	Black Forest Park
Black Forest Park	94R776/94	FESTL KING	53	**-3.2**	*84*	**-4.8**	*70*	Tower Farms
Black Forest Park	94Y430/94	BRUSNIK	22/43	**-2.3**	*90*	**-0.8**	*77*	Willow Creek Deer
Black Forest Park	95O112/95	BERWICK	88/158	**2.2**	*95*	**0.6**	*86*	Black Forest Park
Black Forest Park	95Y940/95	Y940	38/242	**8.1**	*96*	**8.8**	*86*	Invermay
Black Forest Park	97P768/97	SAMARA	84/201	**5.6**	*97*	**1.3**	*90*	Black Forest Park
Black Forest Park	97P773/97	ROMEO	220/302	**14.5**	*98*	**11.7**	*92*	Black Forest Park
Black Forest Park	98G303/98	SANCHO	83/89	**4.7**	*85*	**-0.8**	*70*	Black Forest Park
Black Forest Park	99P015/99	ALEKSIN	46/134	**11**	*96*	**8.2**	*90*	Black Forest Park
Black Forest Park	99P021/99	99P021	48/64	**7.5**	*94*	**6.1**	*81*	RW Bruce
Black Forest Park	99P043/99	KABUL	124/165	**24.9**	*97*	**22.6**	*89*	Black Forest Park
Black Forest Park	99P073/99	JOSENI	137/156	**7.4**	*96*	**6.5**	*88*	Taihape Red Deer
Black Forest Park	99P111/99	TANA	17/46	**7.1**	*93*	**6.7**	*85*	Canterbury Imp Red Deer
Black Forest Park	99Y306/99	LUGAR	24	**15.2**	*89*	**8.6**	*79*	West Bush Deer Stud

European and Composite Stags (cont.)

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Black Forest Park	99Y320/99	SAMURAI	118/151	**14.3**	*96*	**9.6**	*87*	Black Forest Park
Black Forest Park	R911/96	R911	36/156	**9.2**	*93*	**4.7**	*72*	Invermay
Canterbury Imp Red Deer	00472/00	ARAD	13	**12.2**	*84*	**14.8**	*72*	Canterbury Imp Red Deer
Canterbury Imp Red Deer	01533/01	CRUSADER	39	**14.1**	*91*	**14.6**	*76*	Deer Improvement
Canterbury Imp Red Deer	02684/02	02684	6	**9**	*80*	**8.2**	*71*	Canterbury Imp Red Deer
Canterbury Imp Red Deer	96120/96	NICHOLAS	17/19	**10.5**	*83*	**11.3**	*72*	Canterbury Imp Red Deer
Carlisilie Farm	W4019/96	MYSON	45/82	**7**	*94*	**4.4**	*82*	Carlisilie Farm
Doncaster Deer Partnership	1051Y/G	LEGEND	37	**12.2**	*91*	**11.7**	*75*	Deer Improvement
Doncaster Deer Partnership	1203Y/G	FAVOURITE	38	**14.6**	*91*	**12.7**	*73*	Deer Improvement
Doncaster Deer Partnership	205Y/96	CARL	50/68	**17.1**	*94*	**12.8**	*75*	Deer Improvement
Fairlight	01066/01	01066	8	**4.2**	*68*	**1.6**	*52*	Fairlight
Fairlight	01084/01	01084	11	**2.2**	*72*	**0.7**	*56*	Fairlight
Foveran Deer Stud	1367/97	BONN	56/244	**9.5**	*92*	**7.1**	*79*	Foveran Deer Stud
Foveran Deer Stud	1529/97	HERMANSON	104/190	**-2.6**	*91*	**-3.5**	*77*	Foveran Deer Stud
Foveran Deer Stud	1666/98	MAUSER	33/54	**-0.1**	*87*	**-0.4**	*72*	Foveran Deer Stud
Foveran Deer Stud	1703/98	REIKO	31/62	**-0.6**	*86*	**-1.6**	*72*	Foveran Deer Stud
Foveran Deer Stud	2247/00	WREDESON II	53	**0.6**	*87*	**-0.6**	*72*	Foveran Deer Stud
Foveran Deer Stud	269/92	269/92	33	**-0.9**	*74*	**-1.8**	*52*	Foveran Deer Stud
Foveran Deer Stud	34/98	34/98	14	**-9.8**	*67*	**-4.8**	*47*	Foveran Deer Stud
Foveran Deer Stud	501/92	WREDESON	134/375	**-1.9**	*93*	**-4.2**	*78*	Foveran Deer Stud
Foveran Deer Stud	587/92	587	1/286	**1.5**	*91*	**0.9**	*77*	Foveran Deer Stud
Foveran Deer Stud	709/93	709	1/180	**5.1**	*90*	**0.7**	*74*	Foveran Deer Stud
Foveran Deer Stud	OR1474/97	FOVERAN DG	3/9	**6.1**	*74*	**1.1**	*60*	Deer Genetics NZ
Foveran Deer Stud	Y2/84	WREDE	7/30	**-1.5**	*83*	**-4.6**	*69*	Foveran Deer Stud
Fraser Deer Stud	9/95	9	6	**4**	*52*	**1.3**	*37*	Fraser Deer Stud
Invermay	B667/96	B667	1/85	**-2.5**	*92*	**-2.7**	*76*	Invermay
Invermay	B731/97	B731	3/57	**6.6**	*89*	**3.7**	*74*	Invermay
Invermay	B736/97	B736	1/75	**1.7**	*90*	**-0.9**	*75*	Invermay
Invermay	G401/94	G401	6/113	**2**	*93*	**1.7**	*77*	Invermay
Invermay	G686/96	G686	5/38	**1**	*86*	**-0.2**	*69*	Invermay
Landcorp	161/93	161/93	28/113	**0.2**	*93*	**-1.7**	*71*	Landcorp Rangitaiki
Landcorp	195/97	195/97	20	**-3.5**	*47*	**-2.5**	*30*	Landcorp Woodstock
Landcorp	196/97	196/97	6	**-2.3**	*36*	**-1.9**	*23*	Landcorp Woodstock
Landcorp	197/97	197/97	17	**-5.8**	*47*	**-3.6**	*30*	Landcorp Woodstock
Landcorp	269/00	269/00	8	**-7.7**	*37*	**-4.6**	*23*	Landcorp
Landcorp	275/93	275/93	6	**-4.6**	*60*	**-3.3**	*46*	Landcorp Rangitaiki
Landcorp	334/98	334/98	12/18	**0.8**	*78*	**0.3**	*59*	Landcorp Rangitaiki
Landcorp	387/01	387/01	22	**5**	*75*	**2.7**	*58*	Landcorp
Landcorp	439/00	439/00	7	**-3.4**	*59*	**-2.7**	*45*	Landcorp
Landcorp	452/00	452/00	20/21	**5.1**	*77*	**2.1**	*59*	Landcorp Goudies
Landcorp	462/00	462/00	6/9	**-2.9**	*66*	**-1.9**	*50*	Landcorp Goudies
Landcorp	5377/96	5377/96	5/11	**-6.7**	*70*	**-3.8**	*54*	Landcorp Rangitaiki
Landcorp	547/01	547/01	13	**5.1**	*70*	**2.2**	*54*	Landcorp Weka
Landcorp	556/01	556/01	45	**0.1**	*80*	**-1.6**	*61*	Landcorp Weka
Landcorp	787/00	787/00	21/24	**1.8**	*74*	**1**	*57*	Landcorp Goudies
Landcorp	8076/98	8076/98	7	**-8.9**	*62*	**-5.4**	*48*	Landcorp Weka

European and Composite Stags (cont.)

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Landcorp	8171/98	8171/98	10/11	**-3**	*73*	**-1.7**	*56*	Landcorp Rangitaiki
Landcorp	8190/98	8190/98	31/44	**-7.7**	*88*	**-4.4**	*67*	Landcorp Rangitaiki
Landcorp	833/00	833/00	14	**6.3**	*76*	**2.6**	*58*	Landcorp Rangitaiki
Landcorp	835/91	835/91	33/34	**8.5**	*86*	**3**	*66*	Landcorp Rangitaiki
Landcorp	8653/98	8653/98	28/43	**-3**	*87*	**-2.1**	*66*	Landcorp Rangitaiki
Landcorp	8660/98	8660/98	8/11	**-0.7**	*71*	**0.3**	*54*	Landcorp Rangitaiki
Landcorp	8671/98	8671/98	21/46	**-1.2**	*89*	**-0.8**	*67*	Landcorp Rangitaiki
Landcorp	8778/98	8778/98	7/8	**-1.7**	*67*	**-1.2**	*52*	Landcorp Rangitaiki
Landcorp	8794/98	8794/98	7/11	**-4.1**	*71*	**-2.7**	*54*	Landcorp Rangitaiki
Landcorp	90248/99	90248/99	39	**12.2**	*88*	**6.2**	*67*	Landcorp
Landcorp	9033/99	9033/99	15	**-9**	*72*	**-5.9**	*55*	Landcorp Weka
Landcorp Goudies	38/02	38/02	12	**6.6**	*78*	**6.2**	*62*	Landcorp Goudies
Landcorp Goudies	439/00	439/00	7/8	**-1.7**	*64*	**-2**	*49*	Landcorp Goudies
Landcorp Keri Downs	3/02	3/02	18	**7.3**	*72*	**2.9**	*57*	Landcorp Keri Downs
Landcorp Rangitaiki	5002/02	5002/02	7	**7.6**	*77*	**3.8**	*59*	Landcorp Rangitaiki
Landcorp Rangitaiki	5008/02	5008/02	5	**4.6**	*75*	**3.2**	*60*	Landcorp Rangitaiki
Landcorp Rangitaiki	5030/02	5030/02	9	**0.5**	*79*	**-1.1**	*61*	Landcorp Rangitaiki
Landcorp Rangitaiki	5031/02	5031/02	7	**3.7**	*77*	**1**	*59*	Landcorp Rangitaiki
Landcorp Rangitaiki	5066/02	5066/02	13	**5.9**	*81*	**3.6**	*65*	Landcorp Rangitaiki
Landcorp Rangitaiki	5067/02	5067/02	12	**2.3**	*81*	**1.9**	*65*	Landcorp Rangitaiki
Landcorp Rangitaiki	5077/02	5077/02	18	**4.8**	*84*	**2.1**	*64*	Landcorp Rangitaiki
Landcorp Rangitaiki	5163/02	5163/02	6	**8.5**	*78*	**6**	*63*	Landcorp Rangitaiki
Landcorp Stuart	1/99	1/99	56/128	**11.6**	*96*	**8.4**	*80*	Landcorp Stuart
Landcorp Stuart	121/00	121/00	23/33	**8.6**	*91*	**6.7**	*76*	Landcorp Stuart
Landcorp Stuart	127/97	127/97	50/170	**13.6**	*97*	**10.9**	*85*	Landcorp Stuart
Landcorp Stuart	142/00	142/00	45/60	**5.8**	*93*	**6.2**	*78*	Landcorp Stuart
Landcorp Stuart	147/98	147/98	112/144	**1.2**	*97*	**0**	*85*	Landcorp Stuart
Landcorp Stuart	153/97	153/97	3/76	**5.4**	*95*	**3.4**	*82*	Landcorp Stuart
Landcorp Stuart	157/97	157/97	13/24	**2.2**	*84*	**1.6**	*71*	Landcorp Keri Downs
Landcorp Stuart	24/99	24/99	65/140	**7.6**	*96*	**3**	*81*	Landcorp Stuart
Landcorp Stuart	373/02	373/02	6	**7.6**	*81*	**3.4**	*66*	Landcorp Stuart
Landcorp Stuart	38/96	38/96	7/66	**4.4**	*94*	**5.5**	*83*	Landcorp Stuart
Landcorp Stuart	399/02	399/02	8	**8.7**	*82*	**7**	*67*	Landcorp Stuart
Landcorp Stuart	425/02	425/02	8	**13.9**	*83*	**7.6**	*68*	Landcorp Stuart
Landcorp Stuart	428/02	428/02	6	**11.9**	*81*	**8.5**	*67*	Landcorp Stuart
Landcorp Stuart	432/01	432/01	73	**11.5**	*92*	**6.5**	*74*	Landcorp Stuart
Landcorp Stuart	438/02	438/02	27	**6.4**	*89*	**4.6**	*70*	Landcorp Stuart
Landcorp Stuart	440/01	440/01	9	**3.1**	*83*	**2.4**	*68*	Landcorp Stuart
Landcorp Stuart	441/01	441/01	42	**9.2**	*92*	**5.6**	*75*	Landcorp Stuart
Landcorp Stuart	46/98	46/98	1/17	**5.8**	*87*	**4.1**	*76*	Landcorp Stuart
Landcorp Stuart	460/02	460/02	8	**9.2**	*82*	**5.2**	*67*	Landcorp Stuart
Landcorp Stuart	464/02	464/02	20	**5.7**	*87*	**3.5**	*70*	Landcorp Stuart
Landcorp Stuart	468/02	468/02	14	**9.6**	*85*	**8.8**	*68*	Landcorp Stuart
Landcorp Stuart	480/02	480/02	17	**8.2**	*87*	**5.8**	*70*	Landcorp Stuart
Landcorp Stuart	52/97	52/97	73/151	**8.3**	*97*	**5.9**	*84*	Landcorp Stuart

European and Composite Stags (cont.)

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Landcorp Stuart	520/01	520/01	14	**4.4**	*86*	**2.7**	*69*	Landcorp Stuart
Landcorp Stuart	523/01	523/01	10	**1.8**	*82*	**-0.2**	*66*	Landcorp Stuart
Landcorp Stuart	563/01	563/01	41	**8.5**	*91*	**5.6**	*73*	Landcorp Stuart
Landcorp Stuart	592/01	592/01	77	**6.9**	*94*	**4.4**	*76*	Landcorp Stuart
Landcorp Stuart	595/01	595/01	26	**0.1**	*87*	**-0.2**	*73*	Landcorp Stuart
Landcorp Stuart	75/97	75/97	11/21	**4**	*86*	**0.5**	*73*	Landcorp Keri Downs
Landcorp Stuart	82/99	82/99	25/27	**9**	*89*	**6.6**	*74*	Landcorp Stuart
Landcorp Stuart	93/00	93/00	50/55	**11.9**	*93*	**10.9**	*77*	Landcorp Stuart
Love Red Deer Stud	9134/99	AWESOME	59	**6.1**	*87*	**2.1**	*66*	Love Red Deer Stud
Maranoa	YO525/98	YO525	10/52	**4.7**	*90*	**4.5**	*75*	Netherdale Deer
Mt Hutt Station	36/89	WILD'S BORIS 89	34/276	**10.8**	*97*	**7.9**	*83*	Hurunui Red Deer Stud
Netherdale Deer	Y212/96	Y212	40/169	**-6**	*95*	**-7.5**	*80*	Invermay
Netherdale Deer	Y739/98	Y739	16/34	**-0.8**	*87*	**1.7**	*71*	Netherdale Deer
Netherdale Deer	YW26/98	YW26	38/68	**2.2**	*92*	**0.2**	*75*	Invermay
Romanian Import	92016/92	OMUL	17/108	**5.9**	*95*	**1.4**	*81*	Peel Forest Estate
Peel Forest Estate	00162/00	TRAFALGAR	27	**7.4**	*89*	**6.6**	*74*	Deer Improvement
Peel Forest Estate	00225/00	VISCOUNT	34	**6.3**	*90*	**5.7**	*76*	Deer Improvement
Peel Forest Estate	00264/00	ADMIRAL	38	**13.5**	*90*	**9.2**	*75*	Deer Improvement
Peel Forest Estate	00458/00	HORATIO	27	**12.2**	*89*	**8.2**	*74*	Deer Improvement
Peel Forest Estate	00505/00	YOUNG MAX	6	**0.2**	*77*	**-0.4**	*62*	Peel Forest Estate
Peel Forest Estate	02040/02	02040	9	**7.9**	*84*	**4.3**	*70*	Peel Forest Estate
Peel Forest Estate	02044/02	02044	5	**3.6**	*81*	**1.9**	*68*	Peel Forest Estate
Peel Forest Estate	02048/02	02048	8	**9.8**	*83*	**11.9**	*70*	Peel Forest Estate
Peel Forest Estate	02049/02	02049	7	**12.5**	*81*	**12.6**	*68*	Peel Forest Estate
Peel Forest Estate	02051/02	02051	14	**9**	*86*	**10.3**	*72*	Peel Forest Estate
Peel Forest Estate	1166/91	JURGEN	16/298	**1.3**	*98*	**0.9**	*89*	Peel Forest Estate
Peel Forest Estate	3225/93	NELSON	38/446	**8.4**	*99*	**7.4**	*94*	Peel Forest Estate
Peel Forest Estate	4139/94	JAGERMEISTER	5/171	**3.3**	*96*	**2.7**	*88*	Peel Forest Estate
Peel Forest Estate	5121/95	5121	13/77	**1.9**	*91*	**3.2**	*75*	Peel Forest Estate
Peel Forest Estate	96140/96	LANDSEER	2/93	**-4.9**	*91*	**-1.6**	*74*	Peel Forest Estate
Peel Forest Estate	97057/97	MIKEY	6/76	**3.3**	*94*	**4.2**	*85*	Peel Forest Estate
Peel Forest Estate	98113/98	98113	29	**-0.6**	*90*	**-0.3**	*75*	Peel Forest Estate
Peel Forest Estate	98131/98	VUKSON	50/53	**5.8**	*92*	**7.6**	*75*	Peel Forest Estate
Peel Forest Estate	98818/98	98818	7	**0.1**	*71*	**1.2**	*56*	Peel Forest Estate
Peel Forest Estate	99228/99	99228	32/50	**4.1**	*92*	**4.8**	*76*	Peel Forest Estate
Peel Forest Estate	99449/99	99449	10	**4.3**	*84*	**3.4**	*70*	Peel Forest Estate
Peel Forest Estate	99473/99	VICTORY	23	**9.2**	*89*	**6.8**	*75*	Deer Improvement
Peel Forest Estate	99540/99	STRAUSS	53/64	**15.6**	*94*	**12**	*78*	Peel Forest Estate
Pelorus Deer	51/99	51	16	**-2.3**	*76*	**-3.4**	*63*	Foveran Deer Stud
Raroa Red Deer	01066/01	KARAPIRO	19	**8.6**	*81*	**4**	*62*	Deer Improvement
Raroa Red Deer	01076/01	SILVER	32	**6.9**	*85*	**3.6**	*65*	Deer Improvement
Raroa Red Deer	01084/01	PLATINUM	21	**6.8**	*83*	**3.5**	*63*	Deer Improvement
Remarkables Park Deer Farm	A9164/99	HARTMAN	5	**-0.9**	*56*	**-1.2**	*43*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	B0104/00	0104	11	**-3.5**	*79*	**-1.3**	*61*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	C1179/01	HERITAGE	10	**4.6**	*82*	**2.8**	*63*	Deer Improvement

European and Composite Stags (cont.)

Birth Herd	Birth Tag	Current Tag	No. Progeny	W12BV	*W12acc%*	MWTBV	*MWTacc%*	Current Owner
Remarkables Park Deer Farm	C1306/01	1306	5	**-3.3**	*77*	**-2**	*62*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	C1340/01	1340	7	**2.9**	*75*	**2.2**	*58*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	M3169/93	HAMBERG	14/53	**-0.1**	*89*	**4.7**	*74*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	M5003/95	GUNTER	10	**1.2**	*70*	**-0.1**	*54*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	P2056/94	MAGNUS	20/65	**-0.5**	*89*	**-1.2**	*68*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	U6264/96	LARS	15/64	**-4**	*90*	**-2.5**	*68*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	Y7043/97	OTTO	11/42	**-0.9**	*86*	**1.5**	*67*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	Y7047/97	JANOS	12/26	**-3.7**	*84*	**1.5**	*66*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	Y7049/97	FREYBURG	31/35	**-0.3**	*80*	**-0.4**	*61*	Remarkables Park Deer Farm
Remarkables Park Deer Farm	Z8100/98	JONAH	1/49	**6.6**	*90*	**1.1**	*71*	Peel Forest Estate
Romanian Import	95Y184/95	SINTANA	176/492	**1.7**	*99*	**1.1**	*95*	Peel Forest Estate
Romanian Import	G39/93	ROMANY	61/255	**9.2**	*98*	**6.4**	*94*	Stanfield Eastern
Romanian Import	Y1/91	ALEXEI	6/246	**9.2**	*98*	**9.8**	*95*	Stanfield Eastern/Black Forest Park
Romanian Import	Y180/95	SERGEI	68/145	**4**	*95*	**2.1**	*86*	Stanfield Eastern
Stanfield Eastern	001044/00	1044BP	26	**14.2**	*89*	**13**	*78*	Peel Forest Estate
Stanfield Eastern	001086/00	1086BP	9	**15.3**	*80*	**16**	*70*	Peel Forest Estate
Stanfield Eastern	011380/01	VICTOR	25	**7.5**	*85*	**12**	*74*	Doncaster Deer Partnership
Stanfield Eastern	011386/01	LOMA	28	**9.5**	*86*	**14.1**	*74*	Doncaster Deer Partnership
Stanfield Eastern	011390/01	ROMANOV	28	**12.9**	*90*	**10**	*76*	Peel Forest Estate
Stanfield Eastern	011392/01	COLOSSUS	27	**15.4**	*89*	**15.4**	*77*	Deer Improvement
Stanfield Eastern	83/529	HEINRICH	16/390	**13.1**	*98*	**17.2**	*94*	Stanfield Eastern
Stanfield Eastern	89/802	HEINRICH II	17	**4**	*75*	**1.3**	*57*	Stanfield Eastern
Stanfield Eastern	91020/91	KOROS	48/325	**12.9**	*97*	**14**	*84*	Doncaster Deer Partnership
Stanfield Eastern	92002/92	HEINRICH V	30/194	**12.2**	*96*	**14.4**	*88*	Canterbury Imp Red Deer
Stanfield Eastern	92280/92	9280/92	4/277	**7.4**	*97*	**10**	*92*	Landcorp Stuart
Stanfield Eastern	92Y11/92	NICHOLAI	4/245	**13.4**	*97*	**17.6**	*93*	Canterbury Imp Red Deer
Stanfield Eastern	93012/93	IZACK	102/349	**9.4**	*98*	**9.8**	*86*	Doncaster Deer Partnership
Stanfield Eastern	94308/94	VIHAR DG	37/67	**8.7**	*91*	**5.7**	*77*	Deer Genetics NZ
Stanfield Eastern	95058/95	95/058	5	**0.1**	*81*	**3.7**	*73*	Stanfield Eastern
Stanfield Eastern	95132/95	CADIZ	73/202	**10.8**	*96*	**13**	*82*	Doncaster Deer Partnership
Stanfield Eastern	97002/97	97/002	15/78	**7.5**	*95*	**9.5**	*82*	Taihape Red Deer
Stanfield Eastern	97018/97	97/018	58/114	**2.7**	*96*	**6.5**	*84*	Taihape Red Deer
Stanfield Eastern	97020/97	MAXIMILIAN	162/257	**22.5**	*97*	**25.5**	*90*	Stanfield Eastern
Stanfield Eastern	98064/98	BORIS	37/66	**8.6**	*88*	**6**	*76*	Doncaster Deer Partnership
Stanfield Eastern	98082/98	KRONA	84/186	**8.6**	*95*	**8.4**	*81*	Doncaster Deer Partnership
Stanfield Eastern	99208/99	BARLAD	28	**4.2**	*83*	**3.6**	*71*	Doncaster Deer Partnership
Stanfield Eastern	Y902/89	LAZLO	71/600	**1.3**	*98*	**2.3**	*95*	Black Forest Park
Taihape Red Deer	236/96	MERLIN	68/185	**2.4**	*94*	**2**	*77*	Taihape Red Deer
Taihape Red Deer	249/00	TRD HORATIO	18	**4.4**	*85*	**5.9**	*72*	Taihape Red Deer
Unknown	MARCOS	MARCOS	8	**0.6**	*47*	**-0.4**	*30*	Doncaster Deer Partnership
West Bush Deer Stud	818/89	JAGER	15	**4.1**	*72*	**1.8**	*54*	West Bush Deer Stud
Wilkins Farming	B/Y27	B/Y27	17	**8.9**	*80*	**3.8**	*61*	Wilkins Farming