



APPENDIX A
NATIONAL SMALL STOCK IMPROVEMENT SCHEME
REPRODUCTION REPORT



OWNER :
 ADDRESS:

DATE : 10/05/2000
 MEMBER NR : 123456
 FLOCK NR : 4567

FDM : 789
 REFERENCE NR : 005990
 PAGE : 1

BREED = XXXXX

**	1	2	3	4	5	6	7	8	9
EWE ID	Poss. Prod Years	Times Lambed	Number of Lambs	Number Weaned	EPI Dev	Mean Lamb Index	Age 1 st Lamb (months)	Inter Lambing Period	
888 94 057	3.0	3	4	4	5	103	24	367	
888 94 059	3.0	2	4	3	-7	87	24	729	
888 94 066	3.0	3	6	3	-7	89	24	367	
888 94 067	3.0	2	4	4	-1	85	24	733	
888 94 070	3.0	3	4	4	1	90	24	366	
888 94 071	3.0	3	3	3	0	116	24	369	
888 94 073	3.0	3	5	5	15	106	24	365	
888 94 076	3.0	2	5	4	1	89	24	729	
888 94 085	3.0	3	5	4	5	103	24	364	
888 94 086	3.0	3	7	4	-4	74	24	364	
888 94 097	3.0	3	4	2	-7	131	24	366	
888 94 122	3.0	3	5	4	6	104	24	373	
888 94 125	3.0	3	5	5	11	95	24	368	
888 94 139	3.0	2	2	2	-8	124	24	722	
888 94 157	3.0	2	4	4	2	94	24	731	
888 94 161	3.0	1	2	1	-20	109	24	729	
888 94 176	3.0	2	2	2	-9	123	24	725	
888 94 181	3.0	3	4	3	3	127	24	364	
888 94 187	3.0	2	4	3	-4	99	24	725	
888 94 192	3.0	2	3	2	-10	112	24	715	
888 94 196	3.0	3	5	5	17	109	23	366	

**

1. ID of ewe. Format is Stud number, year of birth and sequence number.
2. The possible number of productive years of the ewe. It is divided into half-year intervals. This is calculated from the last lambing date and the birth date of the ewe.
3. Number of times a ewe actually lambed.
4. Total number of lambs born (dead or alive) to the ewe.
5. Total number of lambs weaned by the ewe.
6. Ewe productivity index deviation. This is calculated from the mean Ewe productivity index (EPI) (see value in "Group Summary Report) for each productive year subgroup. For example, a value of 6 means that ewe's EPI was 6 points above the average EPI for her age group.
7. The mean index of all her lambs. In this case the weights of her lambs were corrected for age and sex.
8. Age at first lambing.
9. Average inter lambing period of the ewe.



APPENDIX B
NATIONAL SMALL STOCK IMPROVEMENT
ANIMAL IMPROVEMENT INSTITUTE
GROWTH PERFORMANCE REPORT



SCHEME

OWNER :
 ADDRESS:

DATE : 10/05/2000
 MEMBER NR : 123456
 FLOCK NR : 4567

FDM : 789

BREED = XXXXX

SEX = RAMS

1			2		3		4		5		6		7		8		9		10			11		12		13		1
Animal Id			RS		Weaning Weight		Final Weight				SI%		Scrot Dev		Grd		Dam ID			Prod Years		Wean		EPI Dev				
					Dev	Index	Dev	Index																				
O6	98	810	2	-1.40	78	-0.90	95	89	-1	C	A6	94	370	1.5	3	-7	A6	94	323									
O6	98	858	1	1.50	123	1.70	109	113	0	A	A2	95	51	1.5	2	-13	O6	97	51									
O6	98	860	2	1.00	116	2.00	111	112	-2	C	A2	95	159	1.0	2	6	O6	97	51									
O6	98	861	2	1.20	119	2.40	113	114	4	AA	A2	95	159	1.0	2	6	O6	97	51									
O6	98	863	1	-0.60	91	-1.90	90	90	0	B	A2	95	45	1.5	3	-6	O6	97	51									
O6	98	869	2	-0.70	89	2.20	112	104	3	A	A2	95	3	1.5	4	5	O6	97	51									
O6	98	872	2	-1.70	74	-1.50	92	85	-3	C	A2	95	523	1.0	2	-1	O6	97	51									
O6	98	873	2	-0.60	91	-1.30	93	92	1	B	A2	95	86	1.5	3	-7	O6	97	51									
O6	98	874	2	-1.60	75	-3.70	80	78	3	C	A2	95	86	1.5	3	-7	O6	97	51									
O6	98	880	2	-1.20	81	-0.40	98	92	-5	A	A2	95	122	1.5	5	17	O6	97	51									
O6	98	883	2	0.30	105	1.30	107	106	0	A	A2	92	137	1.0	2	2	O6	97	51									
O6	98	886	2	-0.30	96	-1.80	90	91	2	B	A2	92	186	1.5	4	5	O6	97	51									
O6	98	889	2	1.60	124	1.50	108	113	1	C	O6	95	10	2.0	3	0	O6	97	51									

1. ID of animal
2. Rearing status of animal
3. Weaning weight deviation. This is the first weight recorded for the animal. In this case it was weaning weight. The deviation is the corrected weight of the animal, minus the mean corrected weight for the group, multiplied by the heritability of the trait. In effect this value is a predicted breeding value based on the animal's own performance.
4. Index for weaning weight of the animal. This weight is corrected for management groups, age of the animal, rearing status and age of dam.
5. The same as in 3 for the last recorded weight of the animal.
6. The same as in 4 for the last recorded weight of the animal.
7. Selection index percentage. A selection index (expressed as a percentage) which combines the first and last recorded weights of the animal. Not available if only one weight was recorded.
8. Scrotum deviation. If the scrotum circumference was measured, this is the deviation from the average value of the group.
9. Grade : If the breeder classes the animals in visual groups and submitted it with the weights, this value is then displayed on the report.
10. ID of dam of the animal.
11. Number of productive years of the dam.
12. Total number of lambs weaned by the dam.
13. The Ewe productivity index deviation of the dam.
14. ID of sire of the animal.

POSSIBLE QUESTIONS

1. **Who receives the greatest advantage by buying rams with performance data?**
The commercial farmer. He is the person that will sell more lambs that grow quicker. The Stud Breeder does not receive a direct gain as he sells the rams and not their produce. However by selling more productive animals to the commercial breeders he ensures his survival as a stud breeder.
2. **If the efficiency of production is increased, what advantages does it hold for a) the breed, b) the breeder and c) the commercial farmer?**
 - a) It makes the breed more competitive over other breeds, both locally and internationally.
 - b) Not much, except that it ensures his existence as a stud breeder.
 - c) He will have a greater income with fewer animals.
3. **Are the selection goals of commercial and stud breeders the same?**
Although the stud breeder provides animals to the commercial farmer, their breeding goals differ. The breeder must sell his animals and is therefore more emphasis on appearance while measured performance is not as important. The commercial farmer sells products and in most cases appearance is not as important as weight. The breeder sells traits to the commercial farmer that he cannot sell otherwise. If these two segments do not move closer together there is a very good chance that the commercial farmer will look to other breeder or in extreme cases to other breeds.
4. **Can we select for hardiness?**
No, the heritability of hardiness is zero. We can however select for the components that affect hardiness.
5. **What are the components of hardiness?**
Breeding rate, growth tempo and survival.
6. **Is it dangerous to select for growth alone?**
Selection for only one trait always result in a correlated change (some good, some bad) in other important economic traits. Speed of growth can result in lower reproduction rates and poorer survival. Selection for one trait alone, without taking changes in others into effect is not always beneficial.
7. **Can selection mainly for type have negative effects?**
This can be very disadvantageous. With selection for type there is usually concentrated on traits that are changed easily with selection. These traits are usually influenced by only a few gene combinations. Changes in type can be negatively linked to genes that affect reproduction and production. If reproduction and production are not strictly monitored then losses in these traits can be disadvantageous for both breed and commercial farmer. Changes in conformation can for example decrease the size of the pelvic opening and lead to lambing problems.
8. **Can reproduction be improved with selection?**
It can be improved by 1-2% per year with selection. Although reproduction has a low heritability, there is large variation which can be utilized and incorporated advantageously into a selection programme.
9. **What is meant with a holistic selection program?**
This means that we move away from a system where only certain traits are included in a selection programme. This means that we include growth of the animal, the reproduction performance of the ewe as well as type do attain the productive animal that the industry requires.
10. **What is the standard numbering system that should be followed?**
The stud number (HDM) is not usually imprinted on the eartag, but the year of birth and the sequence number is essential.
11. **For what reason is the standard numbering system important.?**
In any system where records of animals are recorded, the correct identity of each animal is essential. Not only must your own animals be uniquely identified but they must remain unique among animals of other breeders. When all these animals are placed in one data basis a uniform identification system is of cardinal importance to allow data of animals to be stored systematically, data returned to farmers is readable and also for reference purposes.
12. **An animal's performance in a specific trait is dependant on two components. What are these components?**
It is determined by the environmental factors (feeding, climate, health, etc) as well the genes that he/she received from both parents.
13. **How can I determine what portion of an animals performance will be transferred to its progeny?**
Only those traits that are carried in the animal's genes can be transferred to their progeny. It must therefore be determined how his genetic makeup differs from that of other animals for certain traits to be sure that the observed differences are transferred to its progeny.
14. **How can I change an animal's performance the quickest?**
If you want change it quickly the best is to change its environment. This is the basis for shows, but these differences are not necessarily transferable to its progeny. Where shows play an important role, it is the art of the breeder to master the environment to present his animal at it's best.
15. **If I want to compare animal's performance what is the basic requirement?**
To compare animals to each other with the idea of determining which will transfer its superiority to its progeny the environment of all must be the same.
16. **What is a treatment /contemporary group?**
It is a group of animals born in the same 60-day period that have received the same treatment since birth.
17. **What is the minimum number of animals in a treatment group?**

The more the better, but 5 is accepted as the minimum.

18. Name the well-known environmental factors?

19. Birth status, weaning status, sex, animal age, age of dam.

20. What does an index of 108 mean?

If all the animals have received the same treatment, then the animal with 108 index has performed 8% better than the average of the group.

21. How is an index calculated?

The animals own measurement divided by the average of the group multiplied by 100.

22. For which reason is weaning weight the most important weight in the NSSIS?

Weaning weight is firstly used to estimate the reproductive performance of the mother of the lamb. A less important role is to determine the growth potential of the lamb. A more accurate method of determining growth is to use both the weaning and 270 day weight in calculating the potential of a lamb.

23. Why is it important to record ewes that have skipped or produced dead born lambs?

24. In the determining of ewe production the reproduction of an ewe is calculated over a period of time. If a ewe has skipped and been culled it is also important to record this to ensure that the **sire of the ewe** is correctly evaluated. If the female progeny of a ram skip or have more dead born lambs this defect will only be noticed if complete records are kept.

25. What does an Ewe Production Deviation (EPD) of 10 mean?

It means that this ewe has produced 10% more kilograms of lamb weaned than the other ewes that have had the same lambing opportunities.

26. What does the Average Lamb index mean?

This is the average weaning index of all the ewe's lambs. It is important to use this index to identify ewes that have many lambs but does not have the mothering ability (milk production) to raise the lambs properly.

27. How is reproduction and production taken into account?

The growth potential of the lamb must be used together with the performance of its mother, who must be above average for the kilograms of lamb weaned.

28. How is type combined with performance and reproduction?

If type is taken into account make sure that the animal has above average performance and that the mother also has above average reproduction figures.

29. What is the minimum Ewe Production Deviation that the mother of a stud ram may have?

Rams that are considered for stud breeding should preferably be progeny of mothers that have an EPD exceeding +5. The absolute minimum would be 0.

30. What are the advantages of BLUP?

Selection is more accurate; animals from different environments can be compared to each other; it gives a genetic "audit" of the stud flock and breed.

31. What are genetic links?

This means that one or more rams have more than 25 measured progeny in more than one environment. These rams, common to both environments, ensure that these two environments are genetically linked and that animals in these environments can be compared.

32. What are the minimum requirements for BLUP?

Accurate record keeping, both parents must be known, genetic links between the different environments.

33. What makes BLUP different to Indices?

An index only indicates an animal's own performance in comparison with its contemporaries. A BLUP breeding value takes the animals own performance into consideration **as well as** the performance of it's parents, grand parents etc. **as well as** half brothers, half sisters and especially it's progeny. An index is only an indication of an animals breeding value within a specific group. BLUP breeding values can be compared directly over different environments (provided genetic links exist).