Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

The National Sheep Improvement Program

Gerald Q. Fitch
Extension Sheep Specialist

The National Sheep Improvement Program (NSIP) is a national performance testing system developed by SID (Sheep Industry Development) that will allow producers to make the genetic operations. The sheep industry was the only major livestock species without a recognized national performance evaluation program. The Dairy Herd Improvement Association (DHIA), the Beef Improvement Federation (BIF), and the National Swine Improvement Federation (NSIF) all provide guidelines for genetic improvements within their respective industries.

In the spring of 1984, a task force of purebred and commercial producers and technical advisors from extension and research was formed to lay the foundation for a national system. In June of 1986 the Sheep Industry Development program approved the plans for NSIP. Funding for the project was developed from several sources, approximately $270,000 was necessary to develop and implement the program. Iowa State University was selected as the NSIP operations center, and the 1987 lamb crop was the first lamb crop processed through the national performance testing center.

Performance Traits

There are currently eleven traits that are being used in the National Sheep Improvement Program. Those traits are separated into three categories: 1) maternal traits, 2) growth traits, and 3) wool traits. The maternal traits included initially in the program are: 1) prolificacy; number of lambs born per ewe, and 2) productivity; pounds of lamb weaned per ewe. The growth traits include the following weights:
1) 30 day
2) 60 day
3) 90 day
4) 120 day
5) 240 day

A limit of three of these weights may be taken, any number up to three may be obtained. The first weight taken will be considered a weaning weight, additional weights will be considered post-weaning weights.

The wool traits consist of 1) grease fleece weight, 2) clean fleece weight, 3) staple length, and 4) fleece grade. As with any of the above traits. This program was constructed to be very flexible and cost effective. If a producer is only interested in selecting for prolificacy, then he may wish to only measure that trait. If another producer is interested in all of the maternal and wool traits and three of the growth traits, he may collect all of those measurements and receive a genetic evaluation for each of the traits measured.

Record Forms

There are five different forms that are used by producers for recording individual pedigree and performance information. Two of those forms are optional forms, depending on which performance measures you as a producer are interested in collecting.

Enrollment Inventory Form

The Enrollment Inventory form is a one-time only recording form for each flock being enrolled in NSIP. This form is to include every ewe and ram in the flock that will be used for breeding purposes in the current year along with pedigree information on each individual.

Lambing and Weaning Form

The Lambing and Weaning form will be a preprinted form mailed to the producer following receipt of the enrollment inventory form. This form will be used to record all lambing information, along with weaning weights and any post-weaning weight taken.

Mating and Inventory Form

The Breeding Flock Inventory form will be preprinted by NSIP after receipt of the lambing and weaning forms. This form is to be used by producers to update the breeding flock for the next production cycle. Producers can also use this form to record mating information for the next years lamb crop.

Yearling Ewe and Ram Wool Form

This is an optional form to be used only by producers that are interested in collecting yearling measures on the wool traits. NSIP will preprint this form and send it out to producers. Wool measurements will need to be taken on yearlings only.

Lamb Post-weaning Growth Form

This is an optional form to be used only by producers that are collecting post-weaning growth information and have not included that information on the lambing and weaning form. This form will also be preprinted by NSIP and sent to producers who request it.

Genetic Evaluation Forms

Examples of the Flock Genetic Evaluation Summary, Ewe Lifetime Production Summary, and Flock Management Summary are illustrated in Tables 1, 2 and 3, respectively.

Genetic Evaluation Summary

The Flock Genetic Evaluation Summary is a listing of the Flock Expected Progeny Differences (FEPD's) that have been calculated based upon the information sent in by the producer (Table 1). A Flock Expected Progeny Difference is calculated using the newest methodology and computer technology available. FEPD is defined as the difference in performance to be expected from future progeny of a ram or ewe, compared with that expected from future progeny of the average ram or ewe in the same flock. As an example; a ram that is +5.5 lb. for 60 day weight would be expected to produce progeny that would average 5.5 lb. heavier than the flock average at 60 days of age. NSIP uses the individual and all relative's

Table 1. Flock Genetic Evaluation Summary

DATE: 01/11/89
PAGE: 1
FLOCK NUMBER: 99-999-999
NAME: J. A. SHEPHERD
BREED: ANYBREED

National Sheep Improvement Program

COMP NUM	FLOCK TAG	REG NUM	BIRTH DATE	TYPE	MATERNAL LAMBS BORN FEPD	ACC	LBS WEANED FEPD	ACC	GROWTH 30-DAY (LBS) FEPD	ACC	60-DAY (LBS) FEPD	ACC	90-DAY (LBS) FEPD	ACC	WOOL GREASE WT (LBS) FEPD	ACC	CLEAN WT (LBS) FEPD	ACC	LENGTH (INCHES) FEPD	ACC	GRADE (MICRONS) FEPD	ACC
EWES																						
13	82277	P346856F	10-24-82		-.050	.15	-2.8	.20	-.17	.11	-.23	.05			-.18	.44						
14	83280	P347355S	1-03-83		-.022	.20	+2.0	.26	-.40	.11	-.28	.14			-.40	.44						
11	83293	P350544S	2-07-83		-.047	.15	-1.3	.20	-.24	.07	-1.69	.10			+.21	.50						
15	83294	P350545S	2-07-83		-.017	.18	+2.7	.23	+.06	.11	+.31	.14	+.34	.06	+.10	.18						
9	84333	P360719S	1-07-84		+.020	.18	+1.1	.20							+.09	.18						
7	84334	P360720S	1-07-84		-.002	.18	-1.7	.20	+.27	.11	+.98	.10	+.92	.12	-.33	.44						
4	84351	P366876S	2-22-84		+.017	.18	+3.6	.23	-.32	.07	-.53	.10	-.44	.06	-.20	.44						
16	84354	P374231S	4-16-84		-.012	.15	+.0	.20	-.17	.04	-.14	.05										
17	84367	P374227F	9-05-84		+.001	.15	+.3	.20	+.04	.07												
1	85395	P374239S	1-07-85		-.003	.12	+.7	.15							+.82	.70						
2	85398	P374240S	1-16-85		+.032	.15	+4.4	.20	+.28	.07	+.69	.10	+.81	.12	+.94	.60						
5	85407	P374229S	2-16-85		+.080	.18	+3.1	.20	-.04	.07	+.43	.10	+.58	.06	+.52	.62						
12	85409	P374230S	2-19-85		+.018	.15	-3.3	.20	-.04	.04	-.24	.05			-.19	.45						
18	85423	P382658S	4-19-85		+.032	.18	+3.9	.23	-.11	.14	+.26	.10	+.53	.06	+.24	.68						
6	86436	P385584S	1-06-86		+.012	.12	+2.8	.16														
3	86437	P385585S	1-08-86		+.044	.15	+3.1	.20	+.06	.07	+.12	.10	+.24	.12	+.25	.60						
23	86442	P385590S	1-13-86		+.046	.15	+3.0	.20	-.06	.07	-.09	.10	-.27	.12	+.59	.64						
10	86444	P385592S	1-13-86		-.011	.18	-1.1	.20	+.11	.04	-.03	.05	-.15	.06	+.11	.68						
8	86446	P385594S	1-15-86		-.003	.12	+.7	.15	-.04	.07					+1.00	.70						
24	86502	P395513S	3-04-86		+.009	.05	+1.8	.06							-.05	.54						
25	86507	P399721F	9-20-86		-.006	.15	+.4	.20	+.04	.04	+.29	.05	-.07	.06	+.03	.60						
26	86519	P399725F	10-15-86		-.006	.15	-1.3	.20	+.06	.04	-.03	.05	-.09	.06	+.07	.60						
27	86525	P399729F	11-14-86		-.006	.15	-1.6	.20	-.19	.04	-.52	.05			+.50	.60						
E LAMBS																						
66	88586		1-17-88	1	-.003	.04	+.2	.05	+.13	.31	+.41	.33	-.21	.32								
48	88590		1-19-88	2	-.009	.04	+1.4	.06	+.08	.33	+.30	.35	+.21	.32								
49	88592		1-21-88	2	+.009	.05	+1.8	.06	-.55	.32	-.74	.34	-.64	.32								
58	88595		1-22-88	2	+.016	.05	+2.0	.06	+.10	.34	+.48	.34	+.84	.32								
67	88596		1-23-88	1	-.003	.04	-.7	.05	+.16	.31	-.01	.33	-.17	.32								
59	88598		1-23-88	2	+.022	.04	+1.5	.05	+.12	.32	+.15	.34	+.41	.34								
61	88600		1-25-88	2	+.023	.04	+1.5	.05	+.10	.32	+.02	.34	-.26	.34								
62	88601		1-25-88	2	+.023	.04	+1.5	.05	-.14	.32	-.13	.34	-.34	.34								
RAMS																						
20	83300	P360917F							+.00	.26	+.00	.14			+.00	.18						
28	86164	P403844F	11-02-86						+.34	.26	+.55	.30	+.67	.21								
21	86578	P392612S	1-05-86						+.05	.41	+.06	.46	-.06	.42	+.18	.45						

performance to calculate the most accurate estimate of that animals genetic worth.

Three genetic evaluation summaries can be obtained from NSIP. The first is a listing in the order of lowest to highest flocktag number. Those forms will rank the flock from highest to lowest FEPD for the two traits that the producer is most interested in.

Ewe Lifetime Production Summary

The Ewe Lifetime Production Summary is shown in Table 2. This summary is provided by NSIP for each ewe in a producers flock that has lambed in the current production cycle. This summary is probably the most important form to be sent to the producer. A production summary on every ewe in the flock takes many, many hours of work for a producer to complete. This form gives you a complete listing of every lamb each ewe has raised along with the performance information on each lamb. The summary also lists the ewes individual performance at the top of the form along with her FEPD's. This summary gives the producer an up-to-date listing of each and every ewe in the flock, making selection and culling decisions much more simplified.

Flock Management Summary

The Flock Management Summary is separated into three sections (Table 3). The first section lists the overall production summary for the flock, with comparisons given on first time lambing ewes and mature ewes. This section gives the producer an idea if the selection procedures he has used in the past are moving his flock in the right direction. The second section of the summary lists a distribution for your flock in terms of lambing dates and type of births. The third section is an inventory of your flock and a listing of reasons for culling, along with percentages for each disposition code. This form gives the producer many of the averages and flock statistics necessary to make selection and culling decisions.

Table 2. Ewe Lifetime Production Summary

National Sheep Improvement Program

DATE:
FLOCK NUMBER:
NAME:
BREED:

```
            12          SIRE
          20072
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     R2
   21373
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          1017         DAM
          12398
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EWE INDIVIDUAL PERFORMANCE

BIRTH DATE: 1-10-78	GREASE FLEECE WT(LBS): 15.0	NUMBER EXPOSURES: 3
BIRTH TYPE: NA	CLEAN FLEECE WT(LBS): NA	NUMBER LAMBINGS: 4
REARING TYPE: NA	STAPLE LENGTH(INCHES): NA	TOTAL LAMBS BORN: 10
BIRTH WT: NA	FLEECE GRADE(MICRONS): 22.6	TOTAL LAMBS WEANED: 7
60-DAY WT: NA	FACE COVER SCORE: 3	AVG LAMBING INTERVAL: 364
120-DAY WT: NA	SKIN FOLD SCORE: 1	
180-DAY WT: NA	OPTIONAL WOOL CODE: NA	

EWE GENETIC MERIT

FEPD AS OF	MATERNAL						GROWTH						WOOL							
	LAMBS BORN		LBS WEANED		60-DAY (LBS)		120-DAY (LBS)		180-DAY (LBS)		GREASE WT (LBS)		CLEAN WT (LBS)		LENGTH (INCHES)		GRADE (MICRONS)	
	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC	FEPD	ACC
9-28-88	+.112	.23	-1.4	.23	+.07	.14	+1.69	.20			+.16	.47					-.12	.56

LAMBING AND PROGENY PERFORMANCE

DATE LAMBED	OPT EWE CODE	SIRE TAG NUM	LAMB TAG NUM	LAMB REG NUM	SEX	LIV CODE	REAR CODE	BIRTH WT	AGE ADJUSTED WEIGHTS						DISP CODE	OPT LAMB CODE
									60-DAY WT	MGT CODE	120-DAY WT	MGT CODE	180-DAY WT	MGT CODE		
1-10-85		C0124	B172		E	2		13.0								
1-10-85		C0124	R178		R		1	14.0	76.69	08	135.74	09			04	WS
1-07-86		C0124	B245		E	3		12.0								
1-07-86		C0124	R235		R		1	11.0			139.20	11			02	EF
1-07-86		C0124	R241	38778	E		1	13.0			118.80	11			01	E
1-17-87		C0124	B331		R		1	14.0			86.40	09			04	
1-17-87		C0124	B332		R		2	13.0			144.00	09			04	
1-17-87		C0124	B333		R		1	10.0			111.60	09			04	
1-08-88		C5217	815		R		1	14.0	56.74	08	118.74	11			01	H
1-08-88		C5217	816		R		1	14.0	62.49	08	124.49	11			01	S

SEX CODES:
R=Ram
E=Ewe
W=Wether

LIVABILITY CODES (LIV):
1=Aborted
2=Still born/full term
3=Died within 72 hours
4=Died after 72 hours, before weaning

REARING CODES (REAR):
1=Reared on dam
2=Fostered
3=Artificial

DISPOSITION CODES (DIS):

MARKET/BREEDING STOCK:
1=Kept for breeding
2=Sold for breeding
3=Sold as a feeder
4=Sold for slaughter

REASON CULLED:
5=Open
6=Mastitis/milk problem
7=Feet/leg soundness
8=Condition
9=Poor EPD (performance)
10=Other

CAUSE OF DEATH:
11=Predators
12=Lambing difficulty
13=Poisonous plants
14=Respiratory
15=Digestive
16=Accidental
17=Other

FACE COVER SCORES:
1=None beyond poll
2=Beyond poll, not below eyes
3=Below eyes, open face
4=Below eyes, face covered
5=Face entirely covered

SKIN FOLD SCORES:
1=No folds
2=Few folds, small to moderate size
3=Folds, moderate size & num
4=Heavy folds, moderate num
5=Covered with heavy folds

MANAGEMENT CODES (MGT):

PRE-WEANING HEIGHT:
1=No creep, ewes fed by number
2=Creep, ewes fed by number nursed
3=No creep, all ewes fed the same
4=Creep, all ewes fed the same

WEANING HEIGHT:
5=No creep, ewes fed by number nursed
6=Creep, ewes fed by number nursed
7=No creep, all ewes fed the same
8=Creep, all ewes fed the same

POST WEANING HEIGHT:
9=Market lamb
10=Replacement develop
11=Production test

LOCATION:
A=Location 1
B=Location 2
C=Etc

COMP NUM: 000001

FLOCK TAG: R2

Benefits of NSIP

The National Sheep Improvement Program has provided the sheep industry with a tool to increase the efficiency of our operations and provide for a more profitable operation. This program will provide the purebred producer the opportunity to genetically evaluate their flock for traits that are economically important to their own operations. The commercial producer will probably benefit the most from this system as their operations must become as efficient as possible. The commercial producer will have the ability to make management and selection decisions based upon traits that are of the most economic benefit to his or her own operation, such as prolificacy or weaning weight. The commercial producer will also have the opportunity to select rams from flocks enrolled in NSIP. They can select superior rams based upon their genetic performance as well as their visual appearance.

Table 3. Flock Management Summary 1987-1988

DATE:
FLOCK NUMBER:
NAME:
BREED:

National Sheep Improvement Program

PRODUCTION

AVERAGE PERFORMANCE	1ST LAMB EWES		MATURE EWES		AVERAGE PERFORMANCE	1ST LAMB EWES		MATURE EWES	
	1987	1988	1987	1988		1987	1988	1987	1988
EWES EXPOSED:	1	7	23	31	EWES:	10	10		
CONCEPTION RATE(%)	100	0	100	100	GREASE FLEECE WT (LBS)	4.9	43.0		
LAMBS BORN	1.00	.00	1.39	1.68	CLEAN FLEECE WT (LBS)	0.0	0.0		
LAMBS WEANED	1.00	.00	1.39	1.55	STAPLE LENGTH (INCHES)	1.8	2.8		
					FLEECE GRADE (MICRONS)	25.6	25.6		
EWES THAT LAMBED:	1		23	31					
LAMBS BORN	1.00	.00	1.39	1.68	LAMBS:	1		32	49
LAMBS SURVIVING TO WEANING(%)	100	0	100	92	BIRTH WT	13.0	0.0	11.7	9.9
LBS LAMB WEANED/EWE/PROD CYCLE	58	0	135	78	60-DAY WT(AGE ADJ)	44	0	56	51
LBS LAMB WEANED/EWE/12 MO			135	78	(WDA)	.75	.00	.95	.85
DAYS FROM EXPOSURE TO LAMBING	197	0	170	179	120-DAY WT(AGE ADJ)	58	0	100	91
LAMBING INTERVAL (DAYS)			0	369	(WDA)	.48	.00	.84	.76
AGE AT LAMBING (YR/MO)	01/02	00/00	03/02	03/04	180-DAY WT(AGE-ADJ)	0	0	130	112
					(WDA)	.00	.00	.73	.62

DISTRIBUTION

		WEEKS AFTER START OF LAMBING										AGE IN YEARS AT LAMBING					
		1	2	3	4	5	6	7	8	9	10+		1	2	3	4	5	6+
1ST LAMB EWES (#)		0	0	0	0	0	0	0	0	0	0	ALL EWES (#)	0	10	9	8	1	3
(%)		0	0	0	0	0	0	0	0	0	0	(%)	0	32	29	26	3	10
												TYPE BIRTH						
MATURE EWES (#)		2	8	1	4	2	1	1	4	2	6	SINGLE (%)	0	60	33	12	100	0
(%)		8	26	3	13	6	3	3	13	6	19	TWIN (%)	0	40	67	75	0	100
												TRIPLET (%)	0	0	0	13	0	0
												QUAD + (%)	0	0	0	0	0	0

INVENTORY

		DISPOSITION BY CODE																FLOCK
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	8/31/88
LAMBS (#)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
1ST LAMB EWES(#)		0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
MATURE EWES (#)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
BREEDING RAMS(#)		3	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
PERCENT OF TOTAL																		
CURRENT YEAR(%)		31	63	0	0	0	0	0	0	6	0	0	0	0	0	0	0	
PREVIOUS YEAR(%)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

DISPOSITION:
MARKET/BREEDING STOCK:
1=Kept for breeding
2=Sold for breeding
3=Sold as feeder
4=Sold for slaughter

REASON CULLED:
5=Open
6=Mastitis/milk problems
7=Feet/leg soundness
8=Condition
9=Poor EPD (performance)
10=Other

CAUSE OF DEATH:
11=Predators
12=Lambing difficulty
13=Poisonous plants
14=Respiratory
15=Digestive
16=Accidental
17=Other