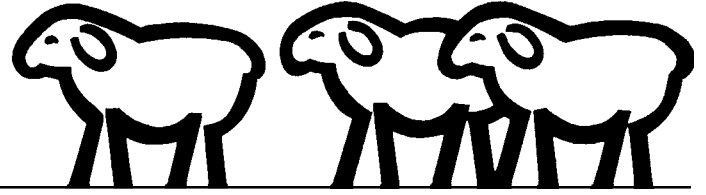


sheep management



fact sheet no. 1

Recommendations for Sheep Selection Programs

Sheep producers can improve their flocks by selecting superior replacements from high-producing ewes and culling inferior, low-producing females. Records of previous performance must be used to increase the accuracy of selection and culling decisions. The most progress will be made if these decisions are based on objective information and records.

The information in this fact sheet outlines a nationally recommended selection program. In support of this program, Iowa State University Extension has forms available that are designed to help flock owners keep the basic records needed.

AS-481(a) is a lambing barn sheet (8½" x 11") that can be used in the barn to record the basic data. It is punched for use in a three-ring notebook or the sheet can be tacked to the lambing area wall. It can be used later to record lamb and wool weights and also can serve as a working record of adjusted lamb weights and ratios.

AS-481(b) is a ewe record (3" x 5") for keeping a permanent record of a ewe's production while in the flock.

Use a card for each ewe in the flock. Transfer the data from the barn sheet to the card. The data on the cards will be the primary information for culling or

keeping ewes. As new ewes come into the flock, use a new card for each of them.

Order forms AS-481(a) and AS-481(b) through your county extension office.

The National Sheep Improvement Program (NSIP) was developed to assist producers in compiling records into a usable form for selection decisions. NSIP uses the sophisticated mainframe computer programs to generate estimates of genetic value. Estimates are provided on three types of traits: (1) maternal, (2) growth, and (3) wool. The actual values are called Flock Expected Progeny Differences (FEPD). The FEPD for an animal estimates how well its offspring compare relative to the flock average. Additional information on NSIP is available through the American Sheep Industry Association, 6911 South Yosemite, Englewood, CO 80112-1414. Producers marketing breeding stock will benefit most from participation in NSIP.

A National Extension Sheep Committee developed suggestions for uniform terminology and methods used in sheep selection programs. The committee recommended that primary emphasis in a selection program be based on pounds of lamb weaned per ewe and on high growth rate of lambs. Wool

production should be included especially for those operations in areas where wool production is particularly important. Performance records should be the major basis for selection of sires and ewe lamb replacements.

Animals with important anatomical defects should be culled. Do not select animals obviously off-type and of poor conformation, especially in purebred flocks. Avoid fads and fancies in type and conformation.

For selection purposes, strive for maximum accuracy. Effects of varying levels of nutrition, climate, management, and other environmental factors cannot be accurately measured. Therefore, limit comparisons to animals reared in the same environment. Weighing conditions should be the same for all animals that are to be compared. An example of this is comparing January versus March born lambs on 60-day adjusted weaning weights.

Understand that the validity of the records is a direct reflection of the honesty of the flock owner and the flock owner's personnel. View production records as a tool in flock improvement programs. They can be valuable adjuncts to merchandising breeding stock if integrity is maintained.

Instructions for Sheep Flock Record Keeping and Selection

Step 1

Permanently identify each ewe in flock. Use flexible, rubber-like permanent tags with large, easy-to-read numbers. Two-piece tags with numbers on both pieces are more expensive, but are easier to read on unconfined, loose sheep. As a means to easily identify age of ewes, the first number of the tag should start with the year born; example: 301 for the first lamb born in 1993.

Step 2

Prepare a Permanent Ewe Record Card, AS-481(b), for each ewe in the flock.

Step 3

Use barn sheet (on wall or in three-ring binder) during lambing period. Fill in information called for on barn sheet up to 60-day weight column. Birth weights need not be taken, but they can indicate management weaknesses.

Step 4

Weigh lambs when they are between 50 and 70 days of age. Reweigh lambs between 110 and 130 days of age. Use barn sheet, AS-481(a), to record weights. Postweaning weights are not necessary for commercial flocks.

Step 5

Weigh all lambs at weaning. Producers can then calculate a 60- or 90-day adjusted weaning weight for their lambs dependent upon the weaning age of the lambs. For sheep operations weaning lambs with an average age of 75 days or less 60-day adjusted weights should be generated. If average weaning age is more than 75 days, then 90-day adjusted weights are more appropriate. All weights must be

adjusted to the same age in order for fair comparisons and accurate selections to be made. A postweaning weight should be taken 45 to 90 days postweaning.

Step 6

(Optional) Weigh and record fleece weights at shearing.

Step 7

Adjust each lamb's weaning weight to the appropriate age for your management system using the appropriate correction factors from table 1. Figure 1 provides examples of calculating adjusted weaning weights.

Step 8

Record adjusted weaning weight of each lamb on the dam's record card.

Step 9

The ewe productivity index is calculated by pounds of lamb weaned + (2 x fleece wt.) x age adjustment. Place the index value on the permanent ewe record. From the permanent ewe record, an average index for all years of production can be calculated. (See figure 2.)

Step 10

Ratios are calculated by obtaining flock averages for the various indexes. The individual index value is then divided by the flock average and multiplied by 100 to give a ratio that represents the percent difference for that individual from the flock average.

Step 11

The lamb's adjusted postweaning weight is calculated by postweaning ADG multiplied by difference in age at weaning and postweaning weights. To this adjusted postweaning gain is added the adjusted weaning weight. (See figure 1.)

Step 12

Calculating the lamb's index depends on the emphasis placed on maternal and growth traits. Commercial producers would place more emphasis on maternal traits. For this situation, the lamb index would be 2 x dam's ratio + adjusted weaning weight ratio + postweaning weight ratio.

Step 13

Sort ewe cards from highest to lowest index. Use this as a basis to select and cull ewes from the flock. Replacement ewe lambs should be selected from those dams with production index ratios above 100. Ewes bred to sires for replacement females should be the top 25 to 33 percent of the ewes on average index value.

Data Corrections

Since growth rate of lambs is so variable by area, multiplicative rather than additive corrective factors are recommended. Correction to single ewe lamb status is considered most practical for overall use.

The multiplicative factors listed in Table 1 may be used to correct the lamb data to a single ewe lamb from a mature dam basis.

The extension service of North Dakota State University and NSIP have mainframe computer programs that will easily and quickly do steps 7 through 13 (and more) for a nominal fee. They welcome Iowa producers to fill out data sheets and send them in for computation. Printouts for use in selection and improvement programs are returned to the producers. Obtain data sheets from Roger Haugen, North Dakota Sheep Production Testing Program, Hultz Hall, NDSU, Fargo, ND 58105; or NSIP, 6911 South Yosemite, Englewood, CO 80112-1414.

Figure 1. Example calculations of 60-day adjusted weaning weights and adjusted postweaning weights

Lamb no.	TOB/R	Dam age	Sex	WW	WW age (d)	PWW	PWW age
507	Tr-Tw	6	Ewe	43	56	95	116
509	S-S	2	Ram	58	54	137	114

$(WW \div WW \text{ Age}) = \text{Prewaning WDA}$

$\text{Prewaning WDA} \times \text{Standard Age of Weaning} \times \text{Adjustment factor from Table 1} = \text{Adjusted WW}$

Adjusted weaning weight for lambs

507 $[(43 \div 56) \times 60] \times 1.27 = 58.5$

509 $[(58 \div 54) \times 60] \times .98 = 63.2$

$(PWW - WW) = \text{PW Gain}$

$(PWW \text{ Age} - WW \text{ Age}) = \text{Days on Feed}$

$120 \text{ day Adj. Wt.} - 60 \text{ day Adj. W} = 60$

$\text{PW Gain} \div \text{Days on Feed} = \text{PW ADG}$

$(\text{PW ADG} \times 60) + \text{Adj. WW} = \text{Adj. PWW}$

Abbreviations:
 TOB/R—Type of Birth Rearing
 WW—Weaning Weight
 WW Age—Age at Weaning
 PW—Post Weaning
 PWW Age—Post Weaning Age
 ADG—Average Daily Gain
 WDA—Weight/Day of Age

Adjusted post weaning weight for lambs

Lamb no.	Weight gain	Days onfeed	Adj. WW	Adj. PWW
	PWW WW			
507	$[(95 - 43) \div (116 - 56)] \times 60$	$+$	58.5	$= 114.2$
509	$[(137 - 58) \div (116 - 54)] \times 60$	$+$	63.2	$= 147.8$

Figure 2. Example calculation of ewe production index and lifetime production index ratios

Ewe index calculation for ewe number 107.

Production records for ewe 107 born in 1992.

Year	Age adjusted pounds of lamb weaned (60-day weaning age)	Ewe age AWW	Fleece weight (lb)
1993	$40 \times 1.15 =$	46.0	8
1994	$48 \times 1.08 =$	51.8	9
1995	$65 \times 1.00 =$	65.0	9.5

1993 production index $[46 + (8 \times 2)] = 78.4$

1994 production index $[51.8 + (9 \times 2)] = 79.2$

1995 production index $[65 + (9.5 \times 2)] = 84.0$

Production index ratio by years

1993 $(78.4 \div 75) \times 100 = 104.5$

1994 $\left[\left(\frac{78.4 + 79.2}{2} \right) \div 75 \right] \times 100 = 105.1$

1995 $\left[\left(\frac{78.4 + 79.2 + 84.0}{3} \right) \div 75 \right] \times 100 = 107.4$

Ewe 107 was 4.5, 5.1, and 7.4 percent better than the flock's average for index ratio during the first three years of production respectively.

Assumes average production index value for the ewe flock equals 75 for all years. See Table 2 for ewe age adjustments.

Table 1. Adjustment factors for correcting weaning weight to a single born and ewe lamb basis^{abc}

		Age of ewe and sex of lamb								
		1			2 or >6			3-6		
Type of Birth	Type of Rearing	E ^c	W ^c	R ^c	E	W	R	E	W	R
S	S	1.13	1.10	1.02	1.08	1.05	0.98	1.00	0.98	0.91
S	Tw	1.21	1.17	1.07	1.13	1.11	1.03	1.05	1.03	0.96
Tw	S	1.29	1.25	1.15	1.19	1.16	1.08	1.10	1.08	1.00
Tw	Tw	1.38	1.33	1.21	1.29	1.26	1.17	1.19	1.16	1.08
Tr	S	1.40	1.36	1.23	1.28	1.25	1.16	1.18	1.15	1.07
Tr	Tw	1.51	1.45	1.31	1.38	1.35	1.25	1.27	1.24	1.15
Tr	Tr	1.80	1.72	1.53	1.54	1.50	1.38	1.36	1.33	1.23

^aNo adjustment factors are available for orphan-reared lambs. If orphans are considered for replacements, their siblings' adjusted weight could be used.

^bLambs born as quads or more should use triplet-born correction factors.

^cE=ewe, W=wether, and R=ram.

Table 2. Sex of lamb and ewe age adjustments for ewe index

Ewe age	Adjustment factor
1	1.15
2 or >6	1.08
3-6	1.00