

## STRATEGIES FOR PRODUCING USDA YIELD GRADE 2 LAMBS

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**Yield Grades.** There are official USDA grades that can be applied to live market lambs and to lamb carcasses. The grades are intended to sort carcasses into like groups. Grades are applied to a live lamb as an estimate of the grade of the carcass produced by that lamb. It is not mandatory for carcasses to be graded. Processors wishing to have carcasses graded pay for the services of an official USDA grader. Unlike **grading** that is voluntary, all carcasses must by law be **inspected** in order to provide consumers a wholesome and safe meat supply. Therefore, “grading” and “inspection” are two different activities and should not be confused.

The official USDA grade standards for lamb carcasses use a dual grading system of quality grades and yield grades. If a processor wishes to have lamb carcasses graded, both a quality and yield grade must be applied to each carcass. Quality grades are intended to sort carcasses on eating quality, and an indicator of intramuscular fat (marbling) is the major determinant of quality grade. The quality grades for lamb are Prime, Choice, Good, Utility, and Cull. Prime indicates the highest degree of marbling and eating quality and Cull indicates the lowest degree of marbling and eating quality.

Yield grades are intended to sort carcasses on proportion of lean meat in the carcass, and the only measurement used to determine yield grade is subcutaneous fat thickness midway over the loin eye between the 12<sup>th</sup> and 13<sup>th</sup> rib. Yield grades for lamb are YG1, YG2, YG3, YG4, and YG5. YG1 indicates the highest and YG5 indicates the lowest proportion of lean meat. Yield grades are calculated from the following formula: Yield grade =  $.4 + (10 \times \text{fat thickness, in.})$ . For example, a carcass with a fat thickness of .27 has a calculated yield grade of 3.1 ( $.4 + (10 \times .27)$ ), and is a USDA YG3 carcass. Carcasses with calculated yield grades of 3.0 to 3.9 are USDA YG3 carcasses. Table 1 presents the relationships between fat thickness, calculated yield grade, and USDA yield grade.

Table 1. Fat thickness and USDA yield grades for lambs

| Fat thickness, in. | Calculated yield grade <sup>a</sup> | USDA yield grade |
|--------------------|-------------------------------------|------------------|
| 0.0 - .15          | 0.0 - .19                           | YG1              |
| .16 - .25          | 2.0 - 2.9                           | YG2              |
| .26 - .35          | 3.0 - 3.9                           | YG3              |
| .36 - .45          | 4.0 - 4.9                           | YG4              |
| .46 and greater    | 5.0 and greater                     | YG5              |

<sup>a</sup>.4 + (10 x fat thickness)

**Why YG 2 lambs?** Lambs with .26 inches of fat thickness or more (YG3 and higher) are excessively fat. Lamb meat cuts with excessive external fat are not desired by the consumer, meat retailers have increased trim losses from fat lambs, and increased fat deposition on live lambs increases feed costs for the producer. On the other hand, carcasses from very thin lambs (lower end of YG1) may have poor eating quality due to low amounts of marbling and excessive shrinkage due to dehydration when shipped. Therefore, YG2 lambs are very desirable. It should be noted that the desirability of YG2 carcasses is not always reflected in prices paid for these lamb carcasses. Market reports often quote the same price for YG1 to YG3, or even YG1 to YG4, carcasses. This pricing structure is due to a failure of the marketing channels for lamb to be able to accurately determine carcass value.

Some processors use the official USDA lamb carcass classification of Certified Fresh American Lamb (CL) to identify lambs with desirable yield grades. CL carcasses must have a fat thickness between .10 and .25 inches (high YG1 and all YG2 carcasses). CL carcasses often return \$5.00 to \$20.00 cwt. more to the processor than non-CL carcasses. Only about 15 to 20% of the lamb carcasses receive the CL grade. It is estimated that 30 to 35% of lamb carcasses qualify for the CL grade, but all processors do not use the grade.

While there is some acceptance of the increased value of lean lambs in the lamb meat industry as evidenced by the premiums paid to processors for CL carcasses, premium payments to producers for lean lambs by processors are still the exception. However, a component of the new Lamb Meat Adjustment Assistance Program (201 Program) operated by USDA through the Farm Service Agency (FSA) and the Agricultural Marketing Service (AMS) will pay producers a \$5.00 per lamb premium for each lamb that produces a certified YG2 carcass. The program is

for lambs marketed during the 2-year period between August 1, 2000 and September 10, 2002. More information on this program can be obtained from your local county FSA office or from the Internet at <<http://www.ams.usda.gov/lsg/201lamb/201.htm>>. A major problem with this program is that most lamb processors do not maintain grading results for individual lambs so most producers do not receive certified grading reports on their particular lambs. Without a certified grading report, you cannot apply for the YG2 premium. If you market lambs through Equity Cooperative Livestock Sales Association, Baraboo, WI, the county FSA office can pay you the YG2 premium based on the proportion of YG2 lambs in the entire lot of lambs in which your lambs were marketed. See your local county FSA office for details on the Equity pilot project.

In summary, production of YG2 lambs should be a goal because it results in a consumer-preferred product that will create a positive reputation for lamb over the long term. Hopefully, premiums received in the meat trade for CL lambs will be translated into higher prices for producers of YG2 lambs in the medium term, and through September 2002, there is a premium of \$5.00 on YG2 lambs if producers can receive grading certification.

Following are some strategies that will assist in the production of YG2 lambs.

**Timely Marketing.** Lambs are not born fat. They get fat by being fed too long. All YG3, YG4, and YG5 lambs were at one time in their life a YG1 or YG2 lamb. Producers should routinely assess the fat thickness of their lambs during the finishing phase and market those with the acceptable amount. Relatively accurate assessment of fat thickness in the live lamb is easily obtained. With the fingers of your hands together, gently palpate along the backbone and down over the front ribs. If the lamb has .10 to .25 inch of fat over the back, the individual spinous processes of the backbone and the ribs can be felt with very little pressure, but they are smooth and rounded. If the lamb has less than .10 inches of fat, the ribs and backbone will be very easily felt and will be sharp. If extreme pressure is needed to feel the backbone and ribs, the lamb has more than .25 inches of fat.

Marketing of lambs at a standard fat thickness will mean that all lambs will not be marketed at the same weight. Lambs of small potential mature size will be marketed at lighter weights than lambs of large potential mature size. However, the major commercial markets for lambs

will demand lambs within a certain weight range, and discounts will be incurred for lambs outside this range. While this desired weight range changes from year to year and between seasons within a year, a producer will generally fare well if he/she strives to market lambs at 120 to 145 lb. live weight. In recent years, the desired live weight of market lambs has been increasing. If your lambs are from breeds of small mature size and do not have the genetic ability to produce a YG2 carcass at these heavier weights, you will need to change to breeds of larger mature size, be prepared to take the discounts for light lambs, market excessively fat lambs within the desired weight range and hope there is no discount, or find a niche market for your lighter lambs. Table 2 can be used to estimate the market weight at which a lamb from breeds of different mature sizes is likely to produce a YG2 carcass.

Table 2. Target slaughter weights<sup>a</sup> to produce YG2 carcasses from ewe and wether lambs produced from sire and dam breeds of varying mature weights

| Ewe breed<br>mature wt., lb. | Sire breed mature wt., lb. (Wt. of ewes of the breed) |     |     |     |     |     |     |     |     |     |     |     |     |     |
|------------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                              | 250   | 240 | 230 | 220 | 210 | 200 | 190 | 180 | 170 | 160 | 150 | 140 | 130 | 120 |
| 250                          | 163   | 159 | 156 | 153 | 150 | 146 | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 |
| 240                          | 159   | 156 | 153 | 150 | 146 | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 |
| 230                          | 156   | 153 | 150 | 146 | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 |
| 220                          | 153   | 150 | 146 | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 |
| 210                          | 150   | 146 | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 |
| 200                          | 146   | 143 | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 |
| 190                          | 143   | 140 | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 |
| 180                          | 140   | 137 | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  |
| 170                          | 137   | 133 | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  |
| 160                          | 133   | 130 | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  | 91  |
| 150                          | 130   | 127 | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  | 91  | 88  |
| 140                          | 127   | 124 | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  | 91  | 88  | 85  |
| 130                          | 124   | 120 | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  | 91  | 88  | 85  | 81  |
| 120                          | 120   | 117 | 114 | 111 | 107 | 104 | 101 | 98  | 94  | 91  | 88  | 85  | 81  | 78  |

<sup>a</sup>Target slaughter weight = ((sire breed mature wt. + ewe breed mature wt.)/2) x .65.  
 Shaded areas indicate desired live weights for market lambs in most commercial markets.

Estimates of average mature ewe weights for some U.S. breeds:  
**230** - Suffolk; **210** - Hampshire; **200** - Columbia; **180** - Dorset, Lincoln, Oxford, Shropshire;  
**170** - Border Leicester, Corriedale, Dorper, East Friesian, Montadale, Romney, Targhee;  
**160** - North Country Cheviot, Polypay, Rambouillet, Texel; **150** - Coopworth, Romanov, Southdown, Tunis;  
**140** - Cheviot, Clun Forest, Finnsheep, Katahdin, Merino, Perendale, St. Croix;  
**130** - Cheviot, Scottish Blackface; **120** - Barbados, Karakul; **110** - Jacob; **90** - Shetland.

Please note that the sire breed weights used as column headings in Table 2 are weights of mature ewes of that breed and not the weight of the rams. To convert the sire breed weights to actual ram weights, multiply each weight by 1.30. An example of using Table 2: If you have

Finnsheep x Dorset ewes with a mature weight of 160 lb., you need to breed them to a breed of ram in which mature ewe weights of the breed are 210 lb. or more (this converts to an individual ram with an actual mature weight of 273 lb. or more;  $1.30 \times 210$  lb.) in order to have lambs with YG2 carcasses at live weights of 120 lb. or more.

**Breed Choice.** Table 2 points out that intelligent use of breeds results in the production of YG2 lambs in the desired weight range. Commercial ewe flocks in the Midwest should be composed of crossbred ewes of breeds of moderate size noted for high levels of lamb production (e.g. Finnsheep, Romanov, Dorset, Rambouillet, Targhee, etc.), and the majority of these ewes should be mated to rams of large mature size breeds (e.g. Suffolk, Hampshire, Columbia, Oxford, etc.) to produce market lambs.

**Nutrition.** Although there is not a great deal of scientific evidence, it is generally felt that lambs grown on high forage diets and then finished on high grain diets will have leaner carcasses than lambs grown and finished on high concentrate rations.

In addition, lambs with the genetic capability for high rates of muscle growth may respond to an increase in amount and quality of protein with increased growth rates and less fat deposition. An effective method of meeting the increased protein needs of such lambs is through the feeding of feeds high in rumen bypass protein. Bypass protein is utilized directly by the animal whereas non-bypass protein is utilized by rumen microorganisms and then the protein in the microorganisms is used by the animal.

Fishmeal has a high proportion of bypass protein. Research at Cornell University has shown that fat thickness decreased by 17%, loin eye area increased by 12%, and weights of leg muscles increased by 19% to 28% when fishmeal was included at 3% of the diet to replace an equal amount of protein from soybean meal. Feed efficiency was improved by about 20% in lambs fed the fishmeal diet. In the northeastern U.S. as a result of this research, lamb rations routinely contain 3% fishmeal. Table 3 presents such a ration for rapidly growing lambs with the genetic ability for superior rates of protein deposition.

**Sex.** The sex of the lamb influences the weight at which optimum fatness is reached. Ram lambs will be 10 to 15% heavier than ewe and wether lambs at the same degree of fatness. Even

though ram lambs are leaner than wether lambs, packers object to ram lambs, and there is at least a \$5.00/cwt. discount on ram lambs throughout the year in most markets. Difficult pelt removal is cited as the main disadvantage of ram lambs, and research supports that ram lambs pelt harder than wethers at any age. However, ram lambs reach market weight sooner and have better feed efficiency than wethers, and when slaughtered at young ages of less than 5 months, their meat has no palatability problems. When deciding whether or not to castrate male lambs, producers must decide if the economic advantages of ram lambs outweigh the price discounts they incur.

Table 3. Growing ration (from weaning to market)

| Ingredient                     | Amount           |
|--------------------------------|------------------|
| Shelled corn                   | 65.0 lb.         |
| Ground or pelleted alfalfa hay | 15.0 lb.         |
| Soybean meal                   | 13.0 lb.         |
| Fish Meal                      | 3.0 lb.          |
| Molasses                       | 2.0 lb.          |
| Feed-grade limestone           | 1.5 lb.          |
| Ammonium chloride              | .5 lb.           |
| <b>Total</b>                   | <b>100.0 lb.</b> |

Chlortetracycline (Aureomycin) should be added at 2.5 grams/100 lb. (50 grams per ton) of ration, **or** if coccidiosis is a problem, lasalocid (Bovatec) should be added at 1.5 grams/100 lb. (30 grams per ton) of ration. Combination of Aureomycin and Bovatec in the ration has not been cleared for use.

The above ration should be mixed, coarsely ground or pelleted and fed twice per day or self-fed. Lambs should also have access to fresh water, a small amount of long alfalfa hay and loose (not a block) trace-mineralized salt that has been formulated for sheep.

**Callipyge Gene.** The callipyge gene was discovered in American Dorsets. Lambs that possess one copy of the callipyge gene and inherited the gene from their sire have extreme amounts of muscling and reduced fat deposition. Carcasses from lambs with the callipyge phenotype will have 20 to 30% lower fat thickness, 30 to 35% greater loin eye areas, and 3 to 40% greater individual muscle weights with muscles in the hindsaddle tending to show the greatest increases. There appear to be no negative effects of the gene on lamb growth rate or viability. There is, however, increased muscle toughness in callipyge lambs; especially in the loin muscle. The increased toughness of the loin can be detected by human taste panels and is found to be objectionable. There are a number of processing techniques that hold promise for tenderizing muscles of callipyge lambs. Until these processes are commercially available, callipyge lambs should not be produced due to poor consumer acceptance.