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Abstract:



Introduction:

The 4-H/FFA Market Lamb project is a popular project for youth livestock exhibitors. Over the 15 years 4-H leaders and volunteers, Extension personnel, and FFA chapter advisors have anecdotally observed that market lambs do seem to be at a heavier weight at their respective shows. To examine this possibility and evaluate the potential for other trends in market lamb projects, data was obtained from two large county shows; the Augusta 4-H/FFA Market Animal Show and the Rockingham County Fair.

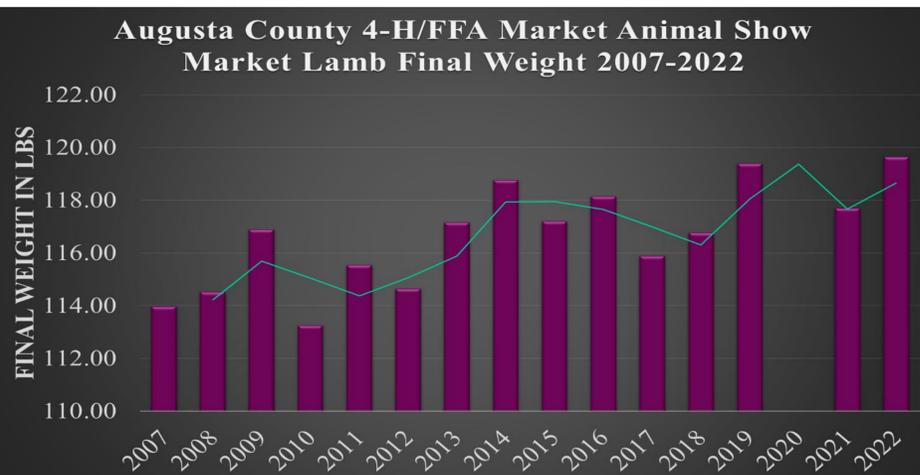
Materials and Methods:

Market lamb data generated by the project can include a nomination weight (beginning), final (market weight) and average daily gain. Additionally, both counties have an established carcass contest via ultrasound evaluation. Carcass contests allow for the additional data including loin eye muscle area and fat depth at the 12-13th rib. Finally, a lamb exhibitor survey was distributed to approximately 211 exhibitors from both counties. A total of 46 responses were collected, a 21.8% response rate.



Augusta County 4-H/FFA Market Animal Show data: Final weight 2007-2022 (n=2759), ultrasound carcass data for 2008, 2016-2019, 2021-2022 (n=721)
Rockingham County Fair data: Beginning weight, final weight average daily gain 2013-2019 (n=1160) and final weight 2013-2019 (n=1635). Also carcass data for 2021-22 (n=83). Sale price data was analyzed in 2021 and 2022.

Figure 1- Augusta Final Wt 2007-2022



Results: Augusta County 4-H/FFA Market Animal Show

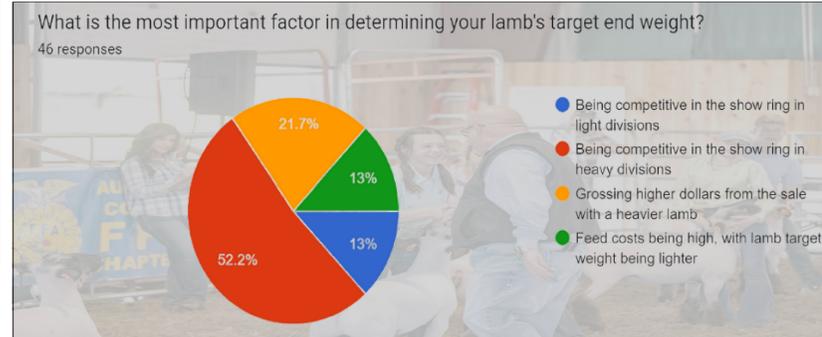
Lamb final weight data is shown in Figure 1. Though there has not been a year over year increase, weights have trended up, increasing 5.69 lbs on average between 2007 and 2022.

Figure 2. Augusta County 4-H/FFA Avg. 2016-2019, 2021-2022



Augusta Carcass Data: In 2008, lamb average loin muscle area (LMA) was 2.63 in.². From 2016-2019 and 2021-2022 lamb average loin muscle area ranged from 3.48 in.² in 2018 to 3.14 in.² in 2021. Lamb loin muscle area appears to have increased from 2008 with heavier lambs although more recently has stayed flat or decreased (Figure 2). Lamb rib fat (backfat depth) at the 12/13th rib remained relatively constant for all scanned years, with averages ranging from 0.19 in 2017 and 2018 to 0.23 in 2016 (Figure 3).

Figure 3. Lamb Exhibitor Survey Results



Lamb Exhibitor Survey Results: 84.8% of respondents stated they prefer a lamb final weight over 120 lbs. Only 15.2% target a weight <120 lbs.

Figure 4. 2016-2022 LMA Relationship to Final Weight for both counties



Combined Carcass Data: Lamb loin muscle area was found to be more highly correlated (r=.59) to lamb final weight than backfat depth to lamb final weight (r=.44) using combined Augusta and Rockingham carcass data (Figure 4.)

Table 1. Rockingham County Fair Lamb Starting Wt, Ending Wt, ADG 2013-2022.

Year	Starting Wt (lbs)	Ending Wt (lbs)	Average Daily Gain
2013	79.53	114.90	0.49
2014	79.96	120.86	0.57
2015	80.11	122.01	0.53
2016	89.57	121.51	0.44
2017	86.47	122.73	0.51
2018	91.64	124.44	0.46
2019	83.12	122.61	0.56
2020		125.29	
2021		127.10	
2022		123.98	

Table 2. Rockingham County Fair Sale Data 2021-2022

2021 Floor Price (\$2.45/lb)	Division 1	Division 2	Division 3
Number of lambs	52	54	55
Average Weight (lbs)	109	128	144
Average Price (\$/lb)	\$8.77	\$9.00	\$8.70
Average Gross \$ over Floor Price/head	\$688.52	\$837.29	\$894.89
Standard Error (SEM)	26.99	36.62	39.07

* Gross \$ different at p=0.05 with Division 1 vs Division 2, Division 1 vs Division 3

2022 Floor Price (\$1.20/lb)	Division 1	Division 2	Division 3	Division 4	Division 5
Number of lambs	34	33	33	34	32
Average Weight (lbs)	102	115	123	135	147
Average Price (\$/lb)	\$8.44	\$7.93	\$7.76	\$7.61	\$7.54
Average Gross \$ over Floor Price/head	\$732.06	\$773.47	\$808.41	\$862.65	\$927.34
Standard Error (SEM)	34.49	34.93	28.25	32.83	28.67

* Gross \$ different at p=0.05 with Division 1 vs Division 4, Division 1 vs Division 5, Division 2 vs Division 5

Results: Rockingham County Fair

Lamb average nomination weights stayed steady from 2013 (79.53 lbs) to 2015 (80.11 lbs) then jumped to 89.11 lbs in 2016, reaching a high of 91.64 lbs in 2018 before backing off to 83.12 lbs in 2019 (Figure 4). Average daily gain (ADG) peaked in 2014 at 0.57 lbs/day. ADG was negatively correlated with starting wt (r=-0.72). Final weight increased from 2013 at 114.9 lbs to peaking in 2021 at 127.10 lbs. Sale data was analyzed using a log transformation to improve normality. A Kruskal-Wallis test was performed to analyze potential differences in sale data. Statistical differences between light, middleweight and heavy lambs were calculated using Tukey's post hoc test. Data is displayed in Table 2.

Conclusion: Lamb final weights tended to increase at both shows with 5.69 lb increase from 2007 to 2022 for Augusta and 9.08 lbs from 2013 to 2022 for Rockingham. Lamb loin muscle area was found to be more highly correlated to final weight than backfat indicating that most lambs are still acquiring muscle as they get heavier. However, lamb loin eye area for Augusta did not show an increase from 2016-2022, but a 0.24 inch sq decrease, while scanned lamb final weights remained the same 121.95 lbs (2016) vs. 121.06 lbs (2022) and average lamb weights at the show increased by 1.5 lbs. Sale data confirms that exhibitors are receiving a higher gross, though differences are not significant between middle and heavy weights. Survey results showed a majority of exhibitors (73.9%) prefer to raise heavy lambs, to either be competitive in the show ring (52.7%), or to gross more dollars at sale (21.7%). A minority of exhibitors stated they prefer to raise lighter lambs to be competitive in the light divisions (13%) or due to feed costs (13%).