

THIRD URUGUAYAN NATIONAL BEEF QUALITY AUDIT: BRUISES CHARACTERIZATION

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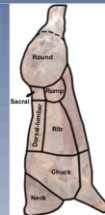
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INTRODUCTION

The third Uruguayan National Beef Quality Audit (UNBQA) was held in 2013 following a 5 years period. It was conducted in a cooperative project among Colorado State University (CSU), INAC e INIA, assessing breed-type, brands, horns and mud/manure, bruises, offal condemnation and carcass quality. Bruising has been identified as one of the most important problems since the first UNBQA. Therefore, their deep characterization have paramount importance for the Uruguayan meat chain for contributing to identify causes and stages (at the farm, during transportation or at the slaughterhouse) where they are mainly produced.

Table 1. Bruises frequency and severity, considering carcass location.

Location	Total (%)	Severity (%)	
		Type 1	Type 2
Round (n=3935)	29.1	73.2	26.8
Rump (n=3042)	22.5	66.2	33.8
Sacral (n= 609)	4.5	74.1	25.9
Dorsal-lumbar (n= 1379)	10.2	79.3	20.7
Rib (n= 2312)	17.1	86.9	13.1
Neck (n= 41)	0.3	75	25
Chuck (n= 2204)	16.3	85.1	14.9



Total of bruises registered: n=13522. Type 1: n=10354, Type 2: n=3168

Shape: severity 2 bruises at the Round were mainly circular (50%) and irregular (49%) being probably inflicted against the truck during transportation. At all other carcass locations, severity 2 bruises were mostly irregular (Rump: 84.3%, Loin: 85.6%, Rib: 82.4%, Neck: 72.7%, Chuck: 90.0%).

Colour: 100% of all registered bruises were bright red, implying that they were produced at any stage from the farm to the slaughterhouse, and not before.

Horns: 29.1% of the cattle had horns.

- ✓ Bruises incidence was not related to horns presence
- ✓ Bruise incidence was not related to the traveled distance
- ✓ Bruises incidence was not related to the slaughter type

Table 2. Type 2 bruises frequency within each region, considering Size.

Location	Small - 2-8 cm Type 2	Medium - 8-16 cm Type 2	Large - 16-30 cm Type 2	Very large >30 cm Type 2	General Area Type 2
Round n= 1054	39.8	39.3	16.7	4.2	0.0
Rump n= 1028	45.4	39.6	11.9	2.6	0.4
Sacral n= 159	62.9	22.6	8.2	2.5	3.8
Dorsal-lumbar n= 285	37.9	24.9	20.7	13.3	3.2
Rib n=303	29.1	32.1	19.9	16.9	2.0
Neck n=11	63.6	27.3	9.1	0.0	0.0
Chuck n= 329	33.4	34.0	19.2	10.9	2.4

Type 2 bruises n= 3168.

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MATERIALS AND METHODS

- ✓ Number of packing plants visited: 10. Four days each.
 - ✓ Number of carcass sampled: 7308 (33% each production lot).
- Total: 22145 animals.

Bruises evaluation - Presence or absence, considering:

a) quantity, b) carcass location (round, rump, sacral area, dorsal-lumbar area, rib, neck, chuck), c) severity (1: subcutaneous, 2: affecting muscle, 3: with broken bones), d) Size (small: 2-8cm, medium: 8-16, large: 16-30, very large: >30, general area), e) Shape (linear, circular, irregular, mottled, tram line) and f) Color (new: bright red, old: dark red/yellow).

Horns - Presence or absence. **Distance from the farm to the packing plant** - close: 0-150km, medium: 151-350km, far: >350km.

Slaughter type: standard (with stunning) or ritual (without stunning).

Statistics: Bruises severity, size and shape: X² test. Association between bruises incidence to horns presence, traveled distance and type of slaughter: GLMM (SAS, 9.4).

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RESULTS/DISCUSSION

Incidence: 73% of the evaluated carcasses had at least one bruise, mainly located at the round and the rump, areas of great economic value (Table 1).

Severity: 28% of the carcass had at least one bruise severity 2 (implying muscle removal).

- ✓ the Round and the Rump had the highest proportion of severity 2 bruises (Table 1).

Size: Severity 2 bruises at the Round and the Rump areas were mainly small (Round: 39.8%, Rump: 45.4%) and medium size (Round: 39.3%, Rump 39.6%).



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SUMMARY/CONCLUSIONS

- ✓ In spite of the big efforts that the Uruguayan meat chain have been doing in order to improve animal welfare and its impact on meat quality, there is an important incidence of bruises, suggesting that the pre-slaughter handling and/or certain facilities are still sub optimal

- ✓ Uruguay must identify causes and stages where bruises are provoked and strengthen corrective capacitation strategies to diminishing its incidence. The short time involved between loading and sacrifice (4 hours of transportation and 12 hours in lairage in average) puts Uruguay in a great challenge in trying to identify the precise phase where bruises are inflicted

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