Quality assessment of marketed eggs in Hanoi (Vietnam)

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INTRODUCTION

Poultry farming is the first sector of livestock that has been industrialized. The poultry sector plays an important role in the GDP of Vietnam. It is the second largest livestock after the pig livestock. The production and consumption of eggs in Vietnam is estimated as 5.64 billion and 102.6 eggs per person per year respectively. The aim of this study was to assess the quality of eggs in relation to the chicken breed and different marketing channels in Hanoi, Vietnam.

MATERIALS AND METHODS

In total, 431 chicken eggs were purchased from four different marketing channels in Hanoi, including households (89 eggs), supermarkets (152 eggs), public markets (130 eggs) and small grocery stores (50 eggs). Out of the 431 above-mentioned eggs, 119 eggs came from the commercial chicken breeds and 312 eggs from traditional local breeds. The quality of eggs for a consumer is represented by its cleanliness, nutritional quality, freshness, and price. A series of measurements is carried out just after their purchase.

RESULTS

According to the breed and the marketing channel, highly significant differences (P <0.05) were found in the freshness of the eggs (Haugh units), egg prices, eggs weight, egg shell, the white and the yolk of the egg. Though the chicken breed and marketing channels do not significantly affect (P> 0.05) the freshness of the eggs, however, they have a significant effect (P <0.05) on the size of the eggs marketed in Hanoi.

Table 1– Distribution (%) of USDA grade by Breed

Haugh Unit value	USDA grade	Distribbution of USDA grade (%)		Statistical Significance	
		Breed		Chisq-value	P-value
		Industrial	Local		
72>	AA	10.67	25.29	0.97	ns
60-72	A	9.05	22.97		
31-60	B	7.42	22.74		
<31	C	0.46	1.39		

Table 2– Distribution (%) of USDA grade by Marketing Channels

Haugh Unit value	USDA grade	Distribbution of USDA grade (%)				Statistical Significance	
		Marketing Channels				Chisq-value	P-value
		Livestock	Public markets	Super-markets	Food Shoop		
72>	AA	14.62	10.21	6.50	4.64	129.63	***
60-72	A	4.18	12.99	13.92	0.93		
31-60	B	1.36	6.50	15.31	6.96		
<31	C	-	0.46	-	4.64		

CONCLUSION

The results of this study show an important diversity in marketing channels and marketed eggs in Hanoi. In general, commercialized eggs in this work were fresh according to HU values. Indeed, it is a proof that this market is characterized by a steady and a variety of supply and consumption (eggs of local and industrial chickens; many marketing channels).

Table3– Distribution (%) of weight classes by Breed

European weight classes	Weight	Distribbution of weight classes (%)		Statistical Significance	
		Breed		Chisq-value	P-value
		Industrial	Local		
X-Large	>73g	1.86	-	298.24	***
Large	63-73g	18.79	0.93		
Medium	53-63g	6.50	18.56		
Small	<53g	0.46	52.90		

Table 4 – Least Squares Means and standard errors of egg weight, Haugh unit, yolk color, yolk/albumen ratio, price per egg and price per kg

	Breed	Marketing Chanels (MC)				P-Value			R^2
		Livestock	Public markets	Supermarkets	Food Shoop	Breed (B)	MC	B* MC	
Egg weight (g)	Indust	-	64.39±0.67^{a1}	63.20±1,09^{a1}	67.61±0.77^{b1}	***	***	***	.52
	Local	49.14±0.53^{a}	50.29±0.58^{a2}	49.03±0.43^{a2}	55.68±1.18^{b2}				
Egg Shape	Indust	-	77,74±0,43	78,17±0,71	76,99±0,50	ns	**	ns	.05
	Local	75.65±0.35^{a}	76.64±0.38^{ab}	77.32±0.28^{b}	77.63±0.76^{b}				
Yolk Color	Indust	-	11.28±0.20	10.76±0.32	11.29±0.23	ns	ns	ns	.02
	Local	11.14±0.16	11.05±0.17	11.26±0.13	11.67±0.35				
Shell weight (g)	Indust	-	7.82±0.10^{1}	7.83±0.16^{1}	8.06±0.11^{1}	***	***	ns	.47
	Local	6.34±0.08^{a}	6.54±0.08^{a2}	6.39±0.06^{a2}	7.10±0.17^{b2}				
Albumen weight(g)	Indust	-	40.66±0.43^{a1}	39.02±0.70^{b1}	41.66±0.50^{a1}	***	***	ns	.75
	Local	27.21±0.35^{a}	29.52±0.38^{a2}	28.55±0.28^{a2}	31.63±0.76^{b2}				
Yolk weight(g)	Indust	-	15.90±0.28^{a1}	16.35±0.46^{a1}	17.90±0.33^{b1}	***	***	ns	.26
	Local	15.59±0.23^{a}	14.24±0.25^{b2}	14.09±0.18^{b2}	16.95±0.50^{c1}				
HU	Indust	-	68.69±1.51^{1}	64.21±2.48^{1}	65.99±1.75^{1}	***	***	***	.28
	Local	76.70±1.22^{a}	65.34±1.32^{b2}	62.04±0.99^{c1}	43.25±2.68^{d2}				
Price per egg (1000VD)	Indust	-	2.33±0.11^{1}	2.27±0.18^{1}	2.45±0.13^{1}	***	***	***	.52
	Local	3.52±0.09^{a}	4.08±0.10^{b2}	4.53±0.07^{b1}	3.11±0.20^{a2}				
Price per kg (1000VD)	Indust	-	34.91±26.51^{1}	35.95±4.32^{1}	37.15±3.06^{1}	***	***	***	.57
	Local	71.65±21.27^{a}	79.99±23.05^{b1}	93.69±17.20^{c1}	69.69±46.75^{d1}				
Y/A ratio	Indust	-	39.18±0.89^{a1}	42.46±1.56^{ab1}	43.04±1.03^{a1}	***	***	ns	.43
	Local	57.42±0.72^{a}	48.39±0.78^{b2}	49.77±0.58^{b2}	53.90±1.58c2				
Fma. (n)	Indust	-	37.02±0.90^{ab1}	38.51±1.55^{b1}	34.43±1.04^{a1}	*	ns	ns	.04
	Local	37.59±0.72	39.29±0.79^{1}	38.37±0.60^{1}	38.92±1.59^{2}				

By row a same letter and by column a same number is attributed to values not presenting any statistical difference between them (P>0.05)