EVOLUTION OF CANNED NATURAL TOMATO CONSUMPTION IN SPANISH HOUSEHOLDS 2005-2016

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INTRODUCTION

Tomatoes are consumed in various forms in Spanish Households, including fresh tomato, without any processing except refrigeration, and also preserved tomato, which is subjected to a sterilization process and usually marketed in tins as whole (Peeled Whole Natural Tomato) or cut into "dice" or pieces (Natural Crushed Tomato). Tomato is also consumed after being transformed into sauces, with the most common being Fried Tomato.

The industrial tomato produced in Spain for exportation reaches 420 million kilos, of which 133 million are sold as Natural Tomato (Crushed and Whole Peeled) and 287 million kilos as Concentrated and Powdered Tomato (Source: Tomato Observatory).

In order to evaluate the trend for the demand of the two main methods of selling canned tomato (**Natural Whole Peeled** and **Crushed Natural**) against the demand for the **Fried Tomato**, this work will study the evolution of the demand for these products, as well as their possible partial substitution with other derivative products.

MATERIALS & METHODS

Data sources

The data was obtained from the Ministry of Agriculture, Food and the Environment Consumption Panel for Spanish Households with the monthly consumption between 2005 and 2016 being evaluated.

Statistical analysis

Differences between groups of data were evaluated using a one-way ANOVA (Duncan's multiple range test, significant difference when $p < 0.05$). All statistical analyses were performed using SPSS software version 17.0 for Windows.

RESULTS & DISCUSSION

Whole Peeled Natural Tomato

Its consumption has decreased in recent years at a rate of more than 330t $year^{-1}$. This trend may be due to a loss of product presence in Spanish households, which has gone from a penetration of 4.4 to 3.4% ($p < 0.05$); but sales value has not declined remaining around 11.5M€ due to the significant price increase observed.

Natural Crushed Tomato

This type of transformed tomato was consumed 6.5 times more than Whole Peeled. Although there are no significant differences in sales volume, the percentage of household penetration, which is now below 20% with a decrease of 1.40kg between 2008/10 to 1.33kg per capita in 2014/16.

Fried Tomato

Its consume has growth over the last 12 year, increasing by 41% between 2005/07 and 2014/16, at an annual rate of 3,4%, 0.1 kg per capita $year^{-1}$. Its average price has also increased, from 1.15€ kg^{-1} between 2005/07 to 1.39€ kg^{-1} for the period 2014/16, a growth of 1% per year. This growth rate, however, is much lower than that experienced by the Natural Crushed or Whole Peeled Tomato.

Future challenges

The Natural Tomato sector must formulate a strategy to ensure that nationwide sales do not continue to fall year on year. The two most logical strategies that are open to the Natural Tomato marketing industry are: (a) reducing costs, with all its inherent difficulties due to production costs and the extremely high levels of competitiveness in the agricultural sector, or (b) a greater differentiation in quality.

CONCLUSIONS

1. The consumption of Natural Tomato is in decline in Spanish Households which are exhibiting a growing tendency towards finished products that are ready for consumption such as Fried Tomato.
2. This contributes to a significant decline in the sale of both Crushed and Peeled Whole Natural Tomato with the latter being the most affected with a greater decrease in sales.
3. The Natural Tomato sector must establish innovative strategies to increase consumption by promoting its use for cooking in households and by developing new forms of consumption for those who do not consume it at present.

Table 1. Consumption data in Spanish Households of Fresh Tomato, Fried Tomato, Peeled Whole Natural Tomato and Natural Crushed Tomato. Different lowercase letters for the same product indicate significant differences according to the Duncan test ($p < 0.05$). The absence of a letter indicates that no significant effect was registered between the different treatments by ANOVA.

		Years			
		2005 a 2007	**2008 a 2010**	**2011 a 2013**	**2014 a 2016**
		Media±S.D.	**Media±S.D.**	**Media±S.D.**	**Media±S.D.**
FRIED TOMATO	VOLUME (t)	121.223±19.012 **b**	152.900±12.143 **a**	164.987±2.411 **a**	171.260±2.471 **a**
	VALUE (€ kg^{-1})	137.268±10.868 **c**	200.238±22.996 **b**	228.808±4.560 **a**	238.604±6.703 **a**
	PRICE(€ kg^{-1})	1,15±0,15 **b**	1,31±0,05 **ab**	1,39±0,01 **a**	1,39±0,02 **a**
	PENETRATION (%)	41,8±3,3	40,9±1,1	43,6±2,8	46,7±0,2
	CONSUMPTION PER CAPITA (kg)	2,79±0,45 **b**	3,37±0,19	3,62±0,08 **a**	3,86±0,10 **a**
	SPEND PER CAPITA (€)	3,16±0,23 **c**	4,43±0,40	5,02±0,15 **a**	5,37±0,21 **a**
NATURAL PEELED WHOLE TOMATO	VOLUME (t)	11.663±3.639	12.005±803	10.155±508	9.024±142
	VALUE (€ kg^{-1})	9.447±1.684	12.200±2.033	11.696±195	11.460±216
	PRICE(€ kg^{-1})	0,86±0,22 **b**	1,01±0,13 **ab**	1,15±0,04 **a**	1,27±0,02 **a**
	PENETRATION (%)	4,4±0,5 **a**	4,3±0,3 **a**	3,6±0,1 **b**	3,4±0,1 **b**
	CONSUMPTION PER CAPITA (kg)	0,27±0,08	0,26±0,02	0,22±0,02	0,21±0,02
	SPEND PER CAPITA (€)	0,22±0,04	0,27±0,03	0,26±0,00	0,25±0,01
CRUSHED TOMATO	VOLUME (t)	56.376±14.815	63.388±2.728	62.928±483	58.761±1.624
	VALUE (€ kg^{-1})	42.861±5.141 **b**	62.209±7.939 **a**	71.030±1.280 **a**	66.818±2.079 **a**
	PRICE(€ kg^{-1})	0,80±0,20 **b**	0,98±0,09 **ab**	1,13±0,02 **a**	1,14±0,00 **a**
	PENETRATION (%)	20,3±0,6 **ab**	21,1±0,6 **a**	20,3±0,1 **ab**	19,5±0,3 **b**
	CONSUMPTION PER CAPITA (kg)	1,30±0,35	1,40±0,03	1,37±0,02	1,33±0,01
	SPEND PER CAPITA (€)	0,98±0,12 **c**	1,37±0,14 **b**	1,56±0,04 **ab**	1,50±0,03 **a**

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