

CONSUMERS' ACCEPTANCE AND WILLINGNESS TO PAY FOR DUAL-PURPOSE POULTRY PRODUCTS

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Abstract – Alternatives to mass culling of male layer chicks are dual-purpose poultry and egg sexing. The first goes along with higher costs and smaller chicken and eggs. Consumers' acceptance of both alternatives remains unknown. A survey was therefore conducted with 402 consumers in Swiss groceries. Results enlighten the ignorance of most consumers about mass culling of male layer chicks. A gap between consumers' willingness to pay and the actual price of dual-purpose poultry products retrieved in groceries was also observed. The smaller size of dual-purpose chicken and eggs did not appear as a concern. Egg sexing was moderately preferred to chick culling but not to dual-purpose poultry. The latter could be a relevant alternative when produced in organic systems.

Key Words – public perception, chicken, eggs, egg sexing.

I. INTRODUCTION

As a consequence of poultry specialization towards either egg or meat production, hundreds of millions of day-old male layer chicks are culled in Europe every year due to their incapacity to lay eggs and poor potential for meat production. This practice is widely spread around the world. A promising alternative lies on egg sexing but the technique is not available yet. Dual-purpose breeds, from which females produce eggs and males are fattened for meat production, have recently emerged from the modern breeding industry as another alternative. Dual-purpose poultry products are already marketed in several countries including Germany, Austria and Switzerland. In the latter, they are so far only produced under organic conditions. The breast muscle of organic dual-purpose broilers is 18 to 48% lighter than that of a regular organic broiler [1, 2], and meat from organic dual-purpose

broilers costs about 13% more at the grocery [3]. The extra costs observed at the grocery for organic eggs from dual-purpose hens are about 20% higher than that of regular organic eggs [3]. The eggs are also 6 to 12% lighter [4, 5].

Chicken and eggs from dual-purpose poultry have arrived just recently in Swiss grocery stores as a response to welfare concerns about the practice of culling day-old chicks only because of their economic non-profitability. However, no information is available yet on consumers' willingness to pay (WTP) for the higher cost of producing dual-purpose products, and little is known about consumers' perception of dual-purpose poultry products. Furthermore, to our knowledge, the acceptance of egg sexing by consumers has never been investigated. Knowledge on consumers' WTP, perception of dual-purpose products and acceptance of egg sexing are important to ensure the success of dual-purpose poultry products.

II. MATERIALS AND METHODS

We conducted a customer survey in grocery stores of the French-speaking (n=4) and German-speaking (n=4) parts of Switzerland between January and February 2016. Immediately after check-out, 402 customers filled in a questionnaire of 66 questions.

After a series of profiling questions (e.g. about the importance of purchasing poultry products produced in Switzerland, purchase frequency of poultry products from different production methods and familiarity with dual-purpose poultry), respondents were informed about the culling of day-old male layer chicks and about dual-purpose poultry. To assess WTP, pictures showing a dual-purpose product and a regular

product (either of chicken or eggs) were presented and respondents were asked how much they were willing to pay for the dual-purpose product. The scale ranged from 0 to 75 Swiss Francs (CHF) for 1 kg chicken breast and 0 to 7.50 CHF for a six-pack of eggs. Prices of imported, inland conventional and inland organic origin for the same commodity were given as references. Additionally, participants responded to the statement “I am not bothered by the smaller size of dual-purpose chickens [respectively, eggs]”. To assess acceptance of egg sexing, respondents were first informed about the prospective possibility to detect male chicks already in the egg and remove them from the incubator. They were then faced with the following two statements: “I find egg sexing better than culling at hatch” and “I find egg sexing better than dual-purpose poultry”. These three items were rated to on a 5-point Likert-scale (from 1: fully disagree to 5: fully agree). In total, 207 “chicken” questionnaires and 195 “egg” questionnaires were collected and used in the analyses. Results are presented using the means (\pm standard deviations).

III. RESULTS AND DISCUSSION

From the 402 respondents, 55% were female and 45% were male. They were on average 49 (\pm 17) years old and mostly German speaking (62% vs. 38% French speaking). Most had no underage child in their household (72%). Only 2% had a strict vegetarian household.

Compared to the Swiss population, men were underrepresented (50% of the Swiss population), but average age and presence of a child in the household were representative [6]. Thirty-four percent of the respondents had a high school degree, which is higher than the Swiss average (29%) [6].

Regarding chicken and egg consumption, the importance of the Swiss origin of poultry products scored 4.3 (\pm 1.1) on a 1 (not important) to 5 (very important) Likert-scale, which confirms the results reported by Dohle and Siegrist [7]. In our study, the share of the respondents buying mostly organic (or free range) chicken and eggs was 35 and 76%, respectively, which is probably above the Swiss average. Dohle and Siegrist [7], who conducted a mail survey, also with a non-representative population, reported that 28% of the Swiss

consumers bought mostly organic meat and 46% mostly organic eggs. However, in terms of sales at a national level, organic chicken and eggs represent only 1 and 15% of the quantity sold, respectively [8, 9]. The higher education level of the respondents and the higher share of women in the present study compared to the Swiss population may have resulted in an overrepresentation of organic consumers [10, 11]. Additionally, consumers willing to take part in such a survey are likely more concerned about and interested in food than others.

Most (75%) of the respondents did not know about mass culling of male layer chicks and 83% of the respondents had never heard of dual-purpose poultry before the survey. Fourteen percent of the respondents indicated to have already bought chicken from dual-purpose broilers, whereas 10% declared having already bought eggs from dual-purpose hens. The former number was probably an overestimation because, unlike dual-purpose eggs which are sold all year round in several grocery stores since 2014, dual-purpose chicken is much more difficult to find. This implies that some consumers may mistake regular organic chicken for dual-purpose chicken.

Respondents' WTP for dual-purpose chicken and eggs is presented in Table 1. Without being informed about the type of production for dual-purpose products (conventional vs. organic), respondents' WTP for dual-purpose chicken was similar to the price of conventional Swiss chicken. This may be the result of the perception of chicken breast as cheap convenient food on the one hand [12] and of the high quality image consumers already have of conventional Swiss meat on the other hand [13]. In contrast, WTP for dual-purpose eggs was situated between the conventional price and the organic price.

Chicken breast from dual-purpose chicken is not sold separately yet, so no price is available. Yet, based on the prices for entire chicken and breast from conventional chicken, price for dual-purpose breast is estimated to reach at least 65 CHF per kg (own calculations). The retail prices are thus above the obtained WTP. We therefore suggest combining the organic label with the dual-purpose label to fill these gaps [11].

Table 1 Observed grocery prices and willingness to pay for dual-purpose poultry products

| Price in Swiss Francs | Chicken (per kg breast) | Eggs (per six-pack) |
|---|----------------------------|------------------------|
| Reference products | | |
| Imported | 19.0 | 1.40 |
| Conventional Swiss | 33.0 | 3.40 |
| Organic Swiss | 57.0 | 4.80 |
| Willingness to pay for dual-purpose | 37.4 (\pm 13.1) | 4.39 (\pm 1.30) |
| Observed prices for dual-purpose ¹ | 19.90 ² | 5.95 |

¹Observed in stores [3]

²Only available as entire chicken (price per kg)

Overall, most respondents fully (38%) to moderately (27%) agreed that the smaller size of dual-purpose products, compared to regular products, was not bothering them. Egg sexing was most often fully (48%) or moderately (17%) preferred to culling at hatch. However, the preference between egg sexing and dual-purpose poultry was torn with 32% of the respondents who fully disagreed that egg sexing was preferable to dual-purpose poultry and 29% who gave a neutral opinion. Respondents often commented egg sexing was too much of an interfering technology. Regarding the organic segment, dual-purpose chicken may anyway fit better than egg sexing to the organic state-of-mind, which for instance forbids sperm sexing in organic cattle in Switzerland.

IV. CONCLUSION

Dual-purpose poultry represents an alternative to the controversial mass culling of day-old male layer chicks but consumers have to accept higher prices as the result of higher costs of production. Although most of this sample of Swiss consumers' accepted the smaller products of dual-purpose chicken, compared to conventionally produced chicken, they were not willing to pay enough for the dual-purpose products, especially not for chicken meat: prices observed in groceries are higher than the WTP observed in this study but the accompanying organic label may help promoting dual-purpose poultry. No clear preference emerged between egg sexing and the dual-purpose poultry approach. Dual-purpose poultry may therefore be a relevant option for the organic segment.

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Readers interested in the questionnaire may ask the contact author for details.

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