



Opinion

Copy Right@ Christian Fischer

# 'An Apple A Day'... Is Going Away. What Can We Do to Stop the Decline in Per Capita Apple Consumption?

Christian Fischer\* and Valérie Bossi Fedrigotti

Faculty of Science and Technology, Free University of Bozen-Bolzano, Italy

\*Corresponding author: Christian Fischer, Faculty of Science and Technology, Free University of Bozen-Bolzano, Universitätsplatz 5 piazza Università, I-39100 Bozen-Bolzano, South Tyrol, Italy.

To Cite This Article: Christian Fischer, Valérie Bossi Fedrigotti. 'An Apple A Day'... Is Going Away. What Can We Do to Stop the Decline in Per Capita Apple Consumption?. 2020 - 10(3). AJBSR.MS.ID.001501. DOI: [10.34297/AJBSR.2020.10.001501](https://doi.org/10.34297/AJBSR.2020.10.001501).

Received: 📅 September 02, 2020; Published: 📅 September 10, 2020

Opinion

Apples (*Malus domestica*) are one of the world's most appreciated fruits. Today commercially grown in 96 countries around the globe, apples are the third most produced fruit by weight, after bananas and watermelons but before grapes, oranges and mangoes, according to FAOSTAT [1]. Apples are harvested in both hemispheres (August through November north and April/May south of the equator). Moreover, now, apples can be kept in long-term cold storage for up to one year [2]. Hence, for decades already, consumers have been able to buy apples nearly everywhere and at any time during the year in most places in the world.

"Eating an apple a day ..." used to be a formula for a healthy life. As all fruits, apples are a source of sugar, fibre, minerals and bioactive compounds such as vitamins, organic acids, phenolics and antioxidants. Recent review studies demonstrate the health benefits of apples [3,4]. However, according to USDA's FoodData Central database (online), raw apples (with skin) are well below the average of the other included raw fruits and berries in total minerals, total vitamins and dietary fibre content (per 100 gr). In particular, oranges, mangoes, bananas, watermelons and grapes all contain, in some cases significantly, higher amounts of micronutrients than apples, and similar amounts of fibre. While the nutritional value of apples is below average, their convenience in terms of being relatively shelf stable and 'portable', having a suitable portion size for snacking and their affordability is rated high by consumers [5]. Therefore, the good reputation of apples as an effective means to "... keep the doctor away" is probably due to their high availability and consumption convenience rather than their actual health properties.

In fact, worldwide, per capita consumption of apples has fallen in most continents. According to FAOSTAT [6], in 2017, Europe is the macro-region with the highest yearly per capita consumption of

apples and apple products at 13.2 kg in 2017. In 2014, it was 15.7 kg and historically peaked at 24.1 kg in 1984. In Oceania, per capita consumption was 11.7 kg in 2017, slightly up from 11.1 kg in 2014 and down from its peak of 25.7 kg in 2005. In the Americas, per capita consumption in 2017 was 10.0 kg, up from 8.5 kg in 2014 but down from the long-term peak of 13.6 kg in 1987. Asia and Africa saw continuous growth in per capita consumption of apples and products from 1961 to 2013 and were at their peaks in 2013 at 10.0 kg and 2.8 kg, respectively. In the period 2014 to 2017 the consumption quantities did not change much from year to year and in 2017 are at 9.0 kg in Asia and 2.2 kg in Africa.

Within North America, also according to FAOSTAT [6], only in Mexico per capita apple consumption increased, reaching an all-time high of 38.6 kg in 2017. In contrast, Canadians consumed 27.3 kg in 2017, down from 33.2 in 2012. In the US, consumption also decreased from 23.0 kg in 2013 to 20.8 kg in 2017.

The reasons for the widespread decline in the consumption of apples are not known. So far, virtually no academic studies have investigated this phenomenon. Konopacka et al. [7] in their survey of apple and peach consumers in seven European countries just report lower apple intake by younger than older people from which they anticipate falling future per capita consumption of the fruit without discussing further reasons. Contrarily, for Canadian food consumers, for the period 2004–2015, Tugault-Lafleur & Black [8] find stagnant fresh fruit and declining fruit juice intake for adults and a slightly increased intake of fresh fruit for children. The authors do not provide reasons for these trends. Some recent industry publications point to the phenomenon of falling fruit and in particular apple consumption. Lin & Mentzer Morrison [9] take a closer look at declining fruit and vegetable consumption in the US between 1994–98 and 2007–08. They find that a strong decline in the



consumption of orange juice was the biggest factor behind the drop of total fruit consumption across all age and gender groups. Some substitution occurred between fruit types, as the consumption of bananas and citrus fruits fell while the one of berries increased. The study finds that socio-economic and demographic factors such as education, income and ethnicity are associated with differences in fruit consumption levels and trends. Moreover, the authors mention lifestyle changes and time constraints as well as price developments as potential reasons for the observed fall in fruit consumption. In Japan, decreasing fruit intake between 2008 and 2017 is mainly attributed to the high and rising purchasing costs for consumers [10]. In contrast, in Australia, the decline in apple consumption went hand in hand with a decrease in apple prices and growers pin their hopes for a market recovery to the introduction of a new, red-fleshed apple variety [11].

In a forthcoming study (currently under review), based on an extensive literature review and data from a postal survey of apple consumers in South Tyrol, Italy, we try to find answers for the phenomenon of falling consumption for the case of Europe. Results from a logit regression of 153 consumer answers in combination with findings from previous studies are used to generate insights. We show that (i) the increasing average age of Europeans, (ii) economic factors such as consumer incomes and apple prices in combination with other demographic characteristics at least for some population segments, (iii) the dissatisfaction of some consumers with available mainstream apple varieties, and (iv) the below-average nutrient content of apples as compared to other fruits for health-conscious consumers are among the main causes of why people eat fewer apples.

## Implications

Declining per capita apple consumption may not be an economic problem for the developed-country apple-growing industry. The world population is still increasing, particularly in Asia and Africa, where per capita apple consumption is also rising or at least not declining. In fact, according to FAOSTAT data [1], world apple production and hence consumption increased from about 71 million tonnes in 2010 to 83 million tonnes in 2017. For developed-country apple growers, this may mean fewer local sales and more exports to emerging markets. Given the long-term storability and good logistical properties of apples, the fruit may ever more become a de-seasonalized and globalised commodity, filling supermarket shelves worldwide, 365 days a year. Because of a low own-price elasticity of apples and therefore rather price insensitive apple buyers, with a focus on serving emerging markets

and with competent sales management, the industry may be able to continue generating profits in the future.

However, in high-income markets where more local food production and consumption is desired, where consumers are increasingly conscious about seasonality, a large choice of products, and health issues, the traditional apple may not have a bright future. In fact, a rather low income elasticity of apples reflects the fruit's low attractiveness to food consumers. Strategies of the apple industry to win back lost buyers in such markets may include variety innovation in particular to improve on the fruit's health properties (e.g., red-fleshed or hypoallergenic cultivars), and smaller and softer fruits to cater for the needs of aging consumers. In addition, consumer excitement may be improved by giving up on the idea of long-term apple storage for focusing on product freshness, and re-establishing seasonality by voluntarily reducing the length of after-harvest sales periods. Further research to support such industry transformations will certainly be needed.

## References

1. FAOSTAT Production Crops database.
2. Mditshwa A, Fawole OA, Opara UL (2018) Recent developments on dynamic controlled atmosphere storage of apples – A review. *Food Packaging and Shelf Life* 16: 59-68.
3. Bondonno NF, Bondonno CP, Ward NC, Hodgson JM, Croft KD (2017) The cardiovascular health benefits of apples: Whole fruit vs. isolated compounds. *Trends in Food Science & Technology* 69: 243-256.
4. Hyson DA (2011) A Comprehensive Review of Apples and Apple Components and Their Relationship to Human Health. *Advances in Nutrition* 2(5): 408-420.
5. Jack FR, O'Neill J, Piacentini MG, Schröder MJA (1997) Perception of fruit as a snack: A comparison with manufactured snack foods. *Food Quality and Preference* 8(3): 175-182.
6. FAOSTAT Food Balance Sheets database.
7. Konopacka D, Jesionkowska K, Kruczyńska D, Stehr R, Schoorl F, et al. (2010) Apple and peach consumption habits across European countries. *Appetite* 55(3): 478-483.
8. Tugault-Lafleur CN, Black JL (2019) Differences in the Quantity and Types of Foods and Beverages Consumed by Canadians between 2004 and 2015. *Nutrients* 11(3): 526.
9. Lin BH, Mentzer Morrison R (2016) A Closer Look at Declining Fruit and Vegetable Consumption Using Linked Data Sources. In: Lin BH, et al. (Eds.) *U.S. Food Commodity Consumption Broken Down by Demographics, 1994–2008*. USDA, Economic Research Service.
10. Aebischer C (2018) Cost a key factor in falling Japan consumption. *Asiafruit*.
11. Nancarrow T (2018) Could Australia's first red flesh apples turn around decline in apple consumption? *ABC Rural*.