グループ別発表　6
発表　1

「自然災害の被災地産農産物に対する
　　　消費者評価-訳ありリンゴを事例として」

観山　恵理子
　　　　東京農工大学
　　　　大学院農学研究院
　　　　助教

Consumer Evaluation of Agricultural Products Produced in Areas Affected by Natural Disasters
: A Case Study of Scratched Apples

ERIKO MIYAMA

TOKYO UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

miyama@go.tuat.ac.jp

14TH OCT. 2021

Q-AOS SYMPOSIUM 2021

Introduction

- Natural disasters are becoming more locally concentrated and severe.

- Damage of agricultural products is one of the main loss caused by natural disasters.

- Apple is a typical example of disaster affected agricultural products.

- Aomori and Nagano are main Apple production area in Japan where probability of typhoon hit is not very low.

- Agricultural damage caused by 19th typhoon in1991 was estimated 74.1 billion JPY within Nagano prefecture.

- Some apples are damaged thorough production process every year, even if typhoon doesn't hit.

Three ways to deal with a damaged apple

| Sell at a low price | Sell as ingredients for processing (e.g. apple juice) | dispose |
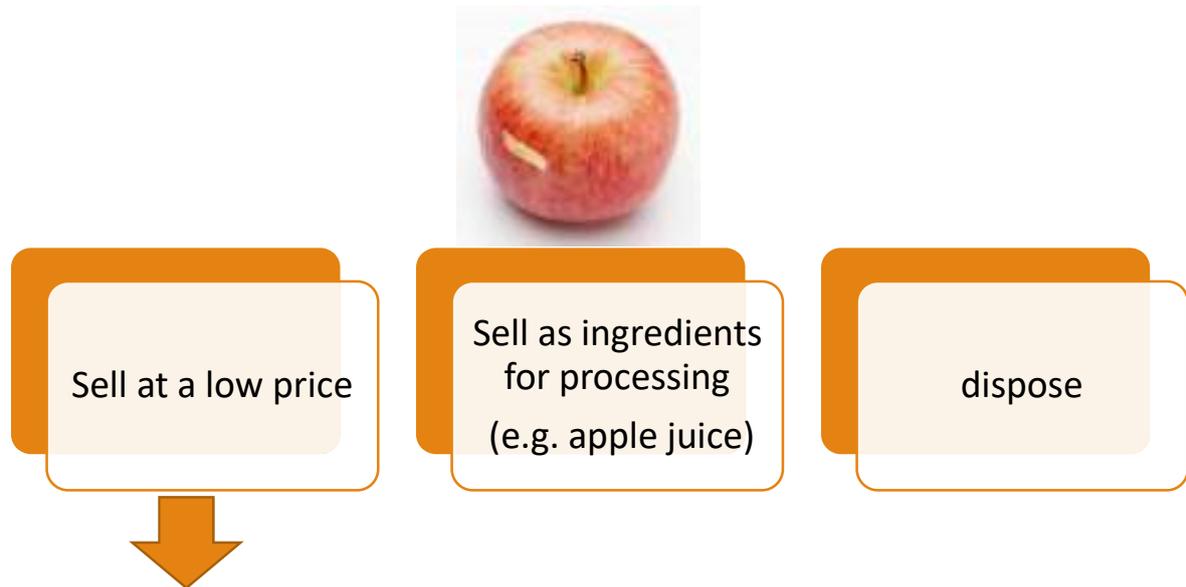
Can consumers support producers by purchasing damaged apples for higher price and contribute to sustainable agriculture?

Japanese Co-op as producer-consumer relationship builder

Consumer's cooperatives (so called co-op) in Japan is not only fresh food delivery service but also have functions to build relationship between producers and consumers.

Literatures related to consumer's evaluation on eco-products

Uchida et al. (2014) 'Demand for ecolabeled seafood in the Japanese market: A conjoint analysis of the impact of information and interaction with other labels'

◦ Information sources influence consumer's evaluation on ecolabeled salmon.

Meyerding and Merz(2018)'Consumer preferences for organic labels in Germany using the example of apples – Combining choice-based conjoint analysis and eye-tracking measurements'

◦ Visual attention relate to stated preference and product choice.

Research Questions

Suppose the products damage is not fatal to usual consumption, how much is the consumers' evaluation on the damaged (scratched) apples?

Does the simple information about disaster(typhoon) and apple production change the consumers' evaluation on the damaged apples?

Does the experience of using Co-op in a daily basis change the evaluation on the damaged apples?

Mixed logit model（Train 2003）

（Explanatory variables are product attributes + cross terms of personal attributes x product attributes）

$$\pi_{in} = \frac{\exp(V_{in})}{\sum_{k=1}^{K}(V_{jn})} f(\beta)d\beta \qquad （1）$$

π_{in}:   Probability that respondent n chooses profile i

V_{in} :   Utility gained by selecting profile i

j: Profile not selected

※The utility parameter β is distributed with probability density f(β)

→β is not uniformly distributed for all individuals = can assume diversity of preferences

$$V_{in} \equiv \sum_{k=1}^{K} \beta_{ik} x_{ik} + \beta_{ip} p_i \qquad （2） \qquad\qquad WTP_k = -\beta_k / \beta_p \qquad （3）$$

x_{ik} : Attributes of k profiles

p_i : Price of the profile i

WTP_k : Marginal willingness-to-pay for attribute k （Hensher et al. 2005）

※ Utility of not buying any of them is assumed to be zero.

Overview of the survey

Date: July 26th – 29th 2021

Questionnaire is distributed via internet by Nikkei Research Inc.

Targets : Consumers living in Japan(stratified sampling by prefecture's population)

Observation collected: 4,100

Screened out samples: 2,403

Valid responses: 1,697

Screening

- Not the main person to purchase daily groceries

- Purchase fresh food less than once a year

- Purchase fresh apples less than once a year

- Couldn't choose which apple to purchase with any confidence at all

→SCREENED OUT

Product attributes and attribute levels

Cultivation method	Donation to support disaster affected area	Scratch	Price (tax included）
• 50% reduced use of pesticides and chemical fertilizers • Conventional	• None • 5％ of the price • 10% of the price	• Yes • No	• 80 JPY • 120 JPY • 160 JPY • 200 JPY

Information

Suppose that several large typhoons hit the apple-growing region just before the harvest, causing scratches on most of the apples produced. In the event of such an unpredictable large disaster, consumers can support the producers and the production area by buying damaged apples at a certain price, which will help maintain the production area in the long term.

Half of the respondents see the information before they answer the choice set selection.

Estimation result and conclusions are omitted because the journal submission procedure is currently ongoing.

References

Hensher, D. A., J.M. Rose, and W. H. Greene(2005) *Applied Choice Analysis*, Cambridge University Press.

Meyerding, S. G. H. and Merz, N. (2018) 'Consumer preferences for organic labels in Germany using the example of apples – Combining choice-based conjoint analysis and eye-tracking measurements,' *Journal of Cleaner Production*, vol. 181: 772-783.

Train, K. E.(2003) *Discrete Choice Methods with Simulation*, Cambridge University Press.

Uchida, H., Onozaka, Y., Morita, T. and Managi, S. (2014) 'Demand for ecolabeled seafood in the Japanese market: A conjoint analysis of the impact of information and interaction with other labels,' *Food Policy*, vol.44: 68-76.