Costs of production and willingness to pay for potato produced with a lower amount of agrochemicals. A case study in Argentina.

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Introduction
In Argentina, potato growing is carried out at different times of the year and regions. The Southeastern Buenos Aires Province (SEBA) is one of the most important areas. The main destination of the product for fresh consumption is the domestic market, and Spunta is the most commercialized variety. Conventional production is characterized by high cost and intensive use of agrochemicals. Several sectors of the population, concerned about the use of agrochemicals and their effects on health and the environment, are willing to pay a premium for food produced with a lower environmental impact.

This work is focused on analyzing if it is feasible to reduce the costs of production when a lower quantity of agrochemicals is employed, and to evaluate if consumers would be willing to pay a differential price for such product.

Materials and methods

- Period: 2011/2012 season
- Area: 80 ha
- Expected performance: 45.000 kg/ha
- Region: SEBA, Argentina
- Modal cost structure + Fungicide applications in season 2011/2012 applying PhytoAlert
- Metodología: Production costs (González & Pagliettini, 2001)

PhytoAlert allows one to anticipate the critical moments of the Late Blight, making timely applications of agrochemicals. It allows one to achieve a potential reduction of costs and the environmental impact, depending on the conditions of each season for the onset of the disease. (Lucca & Rodríguez, 2015)

- Choice Modelling unlabeled
  402 participants, older than 18, consumers of fresh potatoes, with purchasing decision in their homes.
  October 2012; Mar del Plata, SEBA, Argentina
  Demographic, geographical, and socio-economic representativeness
  Attributes and levels: agrochemicals content -low, high-, cooking quality -very good, bad-, treatment -brushed/washed, dirty- and price -low US$ 1.27, medium (US$ 1.69), high (US$ 2.11)-
  Fracctional factorial design -orthogonal- (IBM®SPSS®)
  Three choice blocks, nine product profiles, option-out
- Conceptual framework
  Lancaster Consumer Theory (1966)
  Random Utility Model (Marschak, 1960)
- Econometric methodology
  Conditional Logit Model (McFadden, 1974), main effects, without ASC (Stata® asclogit command)
  Dummy variables

Results

The calculated cost of production for the 2011/2012 season was US$ 0.22/kg. It is noteworthy that the use of a lower amount of agrochemicals allowed a saving of approximately 7% in the cost of fungicides including the cost of the product, workforce and PhytoAlert, compared to the schedule of applications.

![Figure 1](https://via.placeholder.com/150)

Source: Author’s calculation

The estimated results, based on Choice Modeling, indicate that the attribute that contributes most to the utility of consumers is the low content of agrochemicals. On the average, ceteris paribus, the participants were willing to pay US$ 0.53 more per 1 kg of potatoes with low agrochemical content in comparison to a potato without this quality attribute. (Rodríguez et al., 2015)

Exchange rate: US$ 1 = $ 4.73 (Argentina, October 2012)

Conclusions

According to the values obtained, it can be indicated that lower utilization of agrochemicals would cause a reduction in the production costs of potatoes for fresh consumption. Eventually, consumers would be willing to pay a premium for such differentiated product. As this is an exploratory study, which focuses only on one season, the results obtained are indicative. A replica of this study is pending.

Selected bibliography

- Rodríguez, E; Lupín, B & González, J (2015). Willingness to pay for a differentiated potato applying a Choice Modelling Experiment by socioeconomic levels of Argentinean consumers. 29th International Conference of Agriculture Economists, Milan-Italy.