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

Julieta A. Rodríguez[1], Beatriz Lupín[1] & María Florencia Lucca[2]
jarodriguez@mdp.edu.ar - beatrizlupin@gmail.com - lucca.florencia@inta.gob.ar

[1] Agricultural Economics Group, FCEyS - UNMdP
[2] Potato Research Group, EEA INTA Balcarce
Argentina

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

Production

- ✓**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)

Consumption

- ✓**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)-
Fraccional factorial design -orthogonal- (IBM®SPSS®)
Three choice blocks, nine produt profiles, option-out

- ✓**Conceptual framework**

Lancaster Consumer Theory (1966)
Random Utility Model (Marschak, 1960)

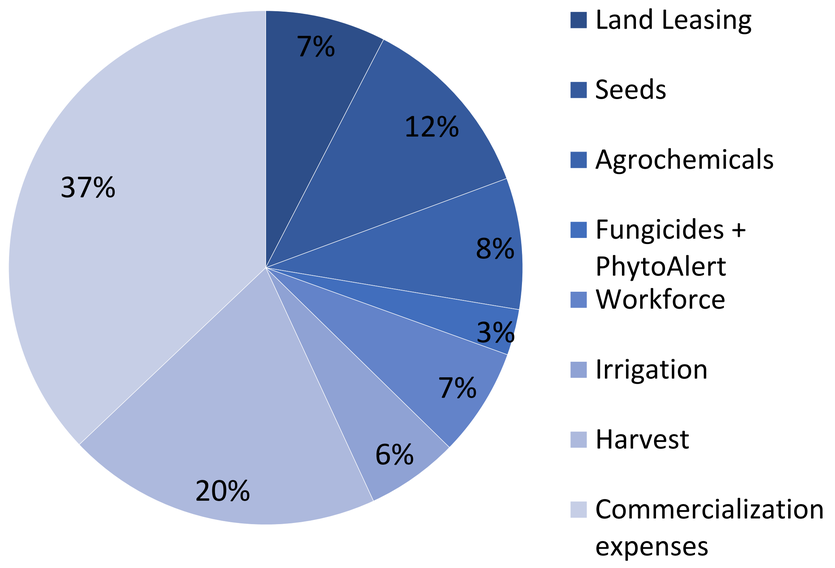
- ✓**Econometric methodology**

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 : Cost composition



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

- González, M & Pagliettini, L (2001). *Los costos agrarios y sus aplicaciones*. CABA-Argentina: FAUBA-UBA.
- Louviere, J J; Hensher, D A & Swait, J D (2000). *Stated Choice Methods. Analysis and applications*. New York-USA:Cambridge University Press.
- Lucca, F & Rodriguez, J (2015). *Phytoalert: When less is more*. 15th Euroblight Workshop, Brasov.
- Rodríguez, E; Lupín, B & González, J (2015). *Willingness to pay for a differentiated potato applying a Choice Modelling Experiment by socioeconomics levels of Argentinean consumers*. 29th International Conference of Agriculture Economists, Milan-Italy.
- Train, K. E. (2009). *Discrete Choice Methods with simulation*. New York-USA: Cambridge University Press.

EAPR 2017
20th TRIENNIAL CONFERENCE
Versailles · 9-14 july 2017