

COMPARATIVE ECONOMIC EVALUATION OF SOLARIZATION IN AGRICULTURE

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In the last century, the increasing demand for agricultural products has been met through the expansion of cultivated land, use of machinery, irrigation, better seeds, fertilizer and other chemicals. Unfortunately, the intensification of agricultural production has brought a series of negative consequences. Among them, contaminations of soil, water, and food with harmful chemicals are some of the big concerns. As a response for this type of problem, different scientists has been studying alternatives that have small negative impacts on consumers' health and on the environment. According to the technical literature, a promising option for soil borne pathogen control is solarization.

However, any alternative method must have economical advantage to be adopted by farmers. Thus, this study develops a comparative economic analysis of solarization *vis-a-vis* the traditional chemical treatment of soil using, as an example, the production of *chrysanthemum* in the State of São Paulo, Brazil.

The background is the neoclassical economic theory and the data were obtained from different sources (literature, farmers, input suppliers, etc.)

The benefit-cost analysis developed shows that the operational cost of production is practically the same. For a 350 m² plot, the solarization alternative costs about R\$ 1,366.04 and the chemical treatment, using methyl bromide, costs R\$ 1,366.78 per crop. However, a proper economic analysis must take other variables into account. In the present case, the followings are relevant and must be considered: a) solarization is as efficient as the chemical treatment for soil borne pathogen control in *chrysanthemum*; b) solarization treatment takes two months vs. five days for the chemical alternative; and, c) solarization must be repeated every three crops vs. every other crop in the chemical treatment. The adjusted gross margin for the farmer was estimated in R\$ 5,412.19 per year for solarization and R\$ 6,286.12 per year for the chemical treatment. Thus, it is not difficult to see the reason farmers are reluctant to adopt this clean and environmentally sound alternative.

Nevertheless, the results presented above have important implications for further research in environmetrics. In this study it was not possible to estimate the externalities generated by either alternative. And, the literature reports growing evidences that the contamination of soil, water, food and workers imposes non-negligible costs upon society. It should be clear that such type of information is of extremely important value for policy purposes as well.