

ADOPTION OF AGRO-ENVIRONMENTAL PARADIGM: TECHNOLOGICAL CHANGES IN THE SUGARCANE CROP AND IMPACTS ON SUGARCANE OCCUPATION AND LIVESTOCK IN SÃO PAULO STATE FROM 2007 TO 2014

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Figure 1 and 2. Mechanical harvesting of sugarcane

In 2007 was signed the Agro-Environmental Protocol between Sugarcane Industry Union, supplier associations and State Departments of Environment and Agriculture of São Paulo stating that the burning of sugarcane straw to facilitate harvesting should be eliminated by 2014 in mechanized areas and by 2017 in non-mechanized areas or smaller than 150 hectares. The aim was to accelerate the adoption of mechanical harvesting of unburned sugarcane to replace the manual harvesting of burnt cane, reinforcing the good environmental image of ethanol. In a previous project, it was found that between 2007 and 2010, increased crop and mechanical planting resulted in a significant decrease in the number of unskilled sugarcane workers, particularly cane cutters. At the same time, with the growth of sugarcane production, the number of employed people with higher professional qualifications raised. This project aims to verify, by 2014, the intensity, economic, social and administrative consequences of the process of expansion of the sugarcane mechanical harvesting in São Paulo. With the Ministry of Labor and Employment data we intended to calculate the variation in the number of sugarcane workers and the other sugarcane occupations in management activities or with higher professional qualification in sugarcane plantations, in the factories and distilleries and in administrative and support functions. Also, social characteristics of sugarcane occupational categories, gender composition, education level and age group will be analyzed. From consultations to documents and official data and interviews with their technicians, we intend to check how public institutions are following this process. Based on specific studies and interviews with staff from sugarcane companies we intend to analyze the effects of this process in the production and sectorial productivity and in people management issues. For four São Paulo regions, we intend to check local socioeconomic consequences of sugarcane mechanization. In addition, there will be econometric study based on several variables raised.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

In the period 2007-14 there was a growth close to 27% in area and 8% in sugarcane production in São Paulo, less expressive dynamism than that observed between 2003 and 2007. The decrease in production per hectare of cane, or cultural performance, was little more than 15% between 2007 and 2014, may be considered that, in part, this result was associated with how quickly grew planting and mechanical harvesting of sugarcane, characterizing the learning cost of new processes. In 2009, it was estimated that 33% of the plantations in the State were mechanized, a figure that jumped to 57% in 2012, while mechanical harvesting of sugarcane passed from 42% to 85% between 2007 and 2013. Such technological change was accompanied by a very positive environmental effect, registering a reduction in the percentage of burnt cane area in order to facilitate their harvest, from 53% to 16%. At the same time, it was found marked reduction in the number of people formally occupied in São Paulo sugarcane companies in activities with low demand for professional qualification. In this sense, the average monthly number of sugarcane workers, which includes the cane cutters, reduced from 178,510 people in 2007 to 73,271 people in 2014, decreasing more than 100K people, therefore, or 59%. Other professional groups in the sugarcane plantations, machine operators, people in management and technical position in agricultural sciences, recorded an increase in their number, but without compensating the drop in sugarcane workers, so that the average monthly occupation in sugarcane production fell from 209.700 to 124.256 people between 2007 and 2014. In other professional groups observed in the whole period, the number of employed persons increased, as in the case of those engaged in industrial activities, in the mills and distilleries, or in administrative and support activities. Making up a balance sheet, it's seen that the total number of sugarcane occupation in São Paulo dropped from a monthly average of 316.122 in 2007 to 264.157 in 2014, and this reduction was followed by change in the composition of sectorial occupation, in favor of those activities with higher requirements of professional qualification. Among the sugarcane workers is observed an increase in the average level of education, a fact consistent with the recent growth of this indicator in the entire Brazilian population. However, unlike other social situations and other sugarcane professional categories, increased the percentage of women and participation of older in this area. Apparently, the younger, more educated, have managed to find other job opportunities, avoiding cutting cane, known to be very exhausting. Other social evidence in São Paulo sugarcane region is the reduction in the presence of seasonal workers who once came, in much more significant number, from states of the Semi-Arid Region to work temporarily in cutting sugarcane.

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