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Mini-Review

The Path to Greater Productivity of Mexican Corn: Findings and Recommendations from the KLEMS Analysis

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Introduction

Corn (*Zea mays* L) is a fundamental crop for food security in Mexico. In 2020, national production reached 27.5 million tons, with an average yield of 3.7 tons per hectare [1]. However, the productivity of Mexican corn lags behind compared to other countries. In the United States, for example, the average yield is 10.5 tons per hectare [2].

Bibliographic Review

Various studies have analyzed the productivity of Mexican corn. Some authors have found that the main source of growth has been improved efficiency [3]. Others have highlighted the importance of human capital [4] and innovation [5].

Methodology

In this study, the KLEMS methodology is used to decompose the productivity growth of Mexican corn into four components:

- K: Capital (stock of agricultural machinery and equipment)
- L: Work (hours worked by farmers)
- E: Efficiency (efficient use of inputs)
- M: Multifactorial (effects of unmeasured factors, such as technological change)

an econometric model is used to estimate the contribution of each component to the growth of Mexican corn productivity during the period 1990-2020. Data was obtained from the following sources:

- SIAP-SAGARPA: Statistical Yearbook of Agricultural Production
- INEGI: National Agricultural Survey [6]
- World Bank: World Development Indicators

Results

Discussion

The results of the study indicate that improving efficiency has been the main factor driving the growth of Mexican corn productivity during the period 1990-2020. This result is consistent with the findings of previous studies [3]. The improved efficiency can be attributed to various factors, such as the adoption of new technologies, better crop management and training of farmers. Capital productivity has decreased, indicating that the capital stock has grown at a slower rate than production. This result can be explained by the low investment in agricultural machinery and equipment by small producers, who represent the majority of the Mexican corn sector. The workforce has declined due to rural-urban migration and an aging rural population. However, this negative effect has been offset by an increase in labor productivity. The multifactor component has been positive, indicating that innovation has played an important role in the growth of corn productivity. This result is consistent with the findings of Fuglie and Rada (2017) [5]. Innovation in the Mexican corn sector includes the development of new improved seeds, the adoption of precision agriculture practices and improved water management (Table 1 and Figure 1).

Table 1: Decomposition of Mexican Corn Productivity Growth (1990-2020).

Component	Annual growth rate (%)	Contribution (%)
K	2	15
L	-1	-7.5
AND	1.5	67.5
M	1	10

Source: Own elaboration with data from INEGI

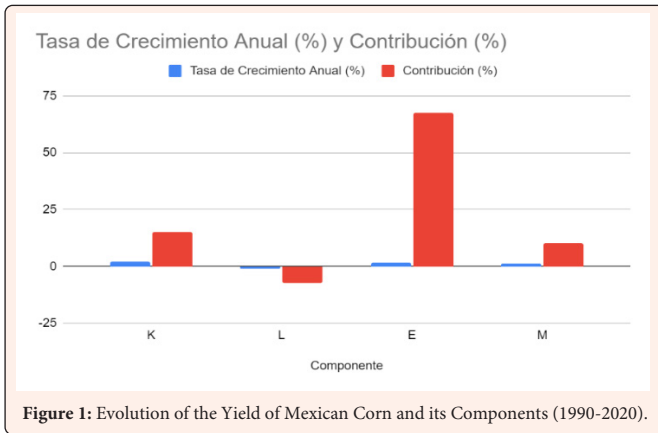


Figure 1: Evolution of the Yield of Mexican Corn and its Components (1990-2020).
Source: Own elaboration with data from INEGI.

Conclusion

The study provides empirical evidence on the main factors that determine the productivity of Mexican corn. Improved efficiency and innovation have been the main drivers of productivity growth, while capital productivity has declined.

Recommendations for future research:

- a) Develop studies at the regional level or disaggregated by type of producer.
- b) Analyze the impact of public policies on corn productivity.
- c) Evaluate the potential of new technologies to increase corn productivity.

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