



Analysis of economic sustainability of tomato greenhouses in Almería (Spain)

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Introduction

Tomato crops in the world occupied approximately 3.9 million hectares in 2001, with a production of about 105 million tones (Naika *et al.*, 2005). The average production of tomato for the period of 2008/12 in the European Union to 27 countries was of 15.8 million of tones (around 15% of the world production), of which 4.2 million of tones corresponded to Spain (GTPT, 2014).

The main objective of this study was to provide estimates of the investment needs, the annual production costs and the yields of tomatoes greenhouses in Almería.

Results

The farmers interviewed belonged in 100% to cooperatives members of the regulating Council of the “Tomate La Cañada-Níjar” Geographic Indications Protected (IGP), producing different types of tomato (Table 1).

Table 1. Incomes of farmers surveyed in 2015/16 according to the type of long-cycle tomato.

Tomato type					
	Furrowed	Cherry	Ch. branch	Kumato	Round branch
Price (€ kg ⁻¹)	1.09	0.71-0.80	0.75-0.80	0.65	0.46-0.63
Yield (kg m ⁻²)	7.1	10.0-12.0	11.0-12.5	11.0	12.0-16.0
Income (€ m ⁻²)	7.7	8.3	9.1	7.2	7.7

The best income was obtained with cherry tomatoes that maintain the production levels close to those of round tomatoes on branch with a much higher price. The average value for the 10 greenhouses analysed was also negative (Table 2).

Table 2. Average production costs and returns for tomato producing greenhouses of farms surveyed in Almería during the agricultural season 2015/16.

Purchase price (€ ha ⁻¹)	
Land	108500
Greenhouse structure	88700
Irrigation system	13515
Irrigation pond	7510
Other investments	10500
Total investments	228725
Equipment and Installation depreciation (€ ha ⁻¹) (%)	
Depreciation	7214 10.3
Total costs - T_C	69908 100
Interest cost of the production (€ ha ⁻¹)	
Interest on capital - I_c	11436
Value of the production	
Yield - Y (kg m ⁻²)	11.3
Average price - p (€ kg ⁻¹)	0.71
Gross revenue - T_R (€ ha ⁻²)	80314
Management Indicators	
Gross margin - G_M (€ ha ⁻¹)	24763
Return to equity - R_E (€ ha ⁻¹)	10406
Net profit - N_P (€ ha ⁻¹)	-1030
Profit of production - N_{PK} (€ kg ⁻¹)	-0.009

Materials and Methods

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The data of this work correspond to 10 exploitations characteristic of the productive system of greenhouses in Almería. Information has been obtained on the type of structure, the management of the soil and the crop, the equipment and the technological level.

Economic data were collected from the different costs and income of farmers (Table 1), to obtain production costs (Fig. 1), the remuneration of the marketable fruits and the main characteristics of the farms corresponding to the 2015/16 agricultural season. The economic results were referred to the surface of greenhouse (ha) in order to compare the different farms of tomato in greenhouses (Oplanić *et al.*, 2007)

The technical-economic data were collected through a survey through direct interviews with farmers, which provided information on tomato production costs (Table 2), revenues and cultural production practices and characteristics of the equipment and facilities (Valera *et al.*, 2016).

In the greenhouses of Almería, the cost of the labor means 46% of the total costs (Fig. 1), varying between 14900 and 46583 € ha⁻¹, in function of the type of tomato cultivated and its management. In the Dutch greenhouses, the labor cost is 28%, due to the important heating expenditure (26% of the total costs).

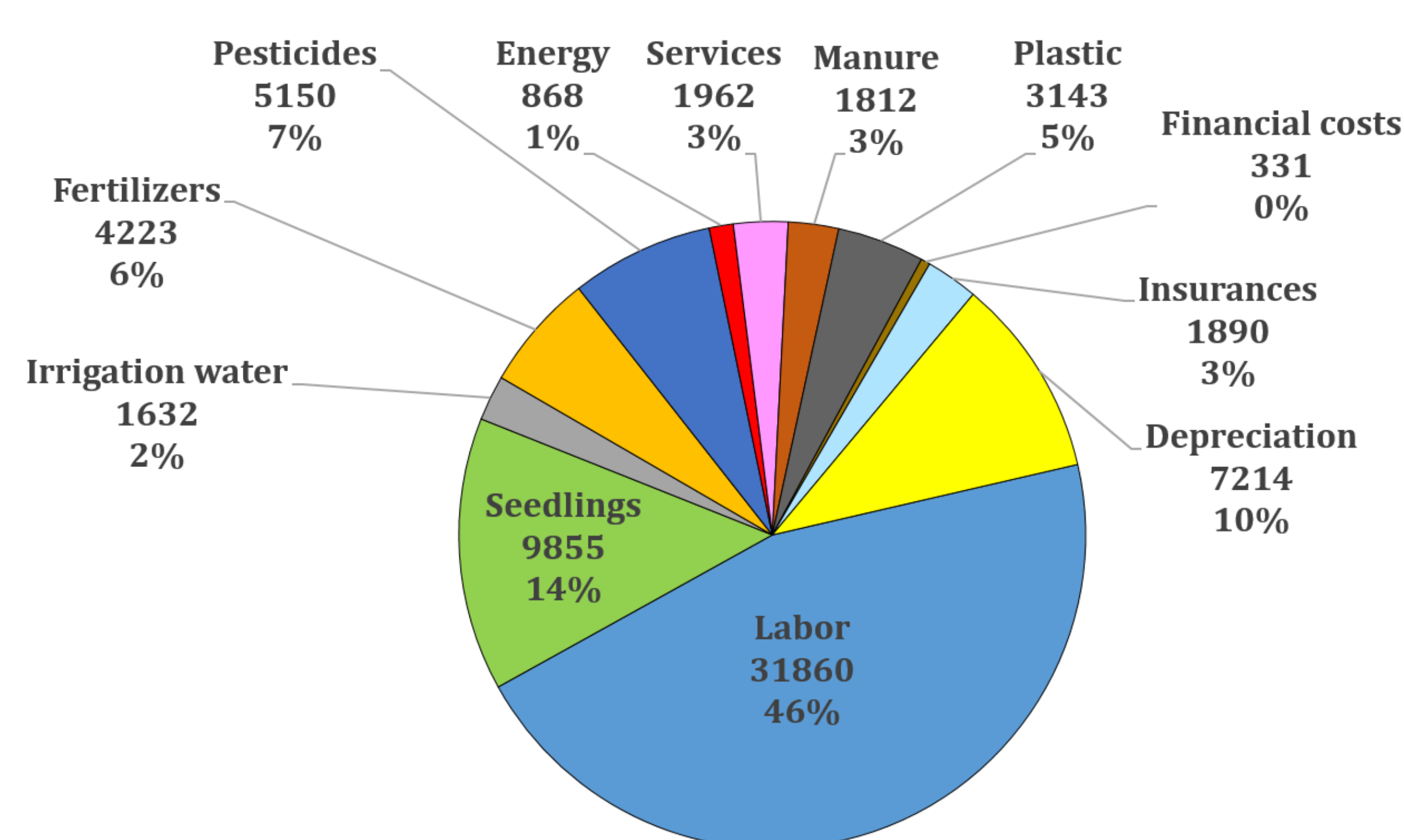


Figure 1. Breakdown of greenhouse tomato production costs (in € ha⁻¹) in Almería in 2015/16.

Conclusions

- In general, the producers of tomato in greenhouses do not carry out an exhaustive accounting of the costs that could allow them to evaluate their profitability in the medium and long term.
- The main determinant factor of the economic profitability of the long-term farms is the sale price of the tomato.
- The greenhouses of Almería presented in the season 2015/16 lower levels of profitability, with an average net margin (difference between revenue and total costs) of 10406 € ha⁻¹.