

Papaya crop an alternative for intensive horticultural production of Almería

The high-yield agricultural model in Almería is based on eight different crops grown under plastic greenhouses: tomato, sweet pepper, cucumber, courgette, aubergine, green bean, melon and watermelon. Having led fruit and vegetable exports in Spain for more than 50 years, a decrease in melon growing areas in Almería in the last years has caused a change in supply that is affecting the model's profit. Papaya cultivation could reactivate the profit of the agricultural model in Almería that is at a mature stage and also improve the available product range.

Evolution of the wintering area by type of crop (2009–2018) in hectares.

Year	Tomato	Sweet Pepper	Cucumber	Aubergine	Courgette	Green Bean	Melon	Watermelon	Total Area Green-House
2009	10,147	7505	4430	1868	4717	921	4447	5216	39,251
2010	9939	7475	4498	1824	5020	776	4039	5516	39,087
2011	9050	7300	4550	1924	5265	680	3539	4916	37,224
2012	9124	7388	4535	2190	5789	1170	3740	5665	39,601
2013	10,358	8461	4920	2006	6448	1321	4200	6400	44,114
2014	11,206	9378	4839	1908	7219	1387	2591	7100	45,628
2015	10,345	9326	4979	2447	7477	1439	2946	8378	47,337
2016	10,940	9491	5026	2300	7630	1340	2467	8590	47,784
2017	10,220	10,310	4980	2150	7970	1030	2220	8940	47,820
2018	10,380	10,181	5099	2209	7860	510	2290	9860	48,389

Scientists at the University of Almería (Spain) have showed the advantages of incorporating a subtropical crop like papaya and increasing the range of products offered by the Almería agricultural sector, which tends to concentrate the supply on only eight horticultural commodities. Papaya cultivation has been selected for several reasons: there is an important Northern European demand for this crop and papaya can be cultivated under greenhouses with the productive conditions of the Spanish southeast.

For these reasons, the scientists have assessed the quality of papaya cultivation grown under a naturally ventilated greenhouse and have estimated the net profit before taxes that the papaya crop would generate, over a period of 2.5 years (30 months). A comparison is made with the most common horticultural crop combinations in South



Eastern Spain, crops that have been grown in the province of Almería for four decades.

The papaya crop needs greenhouse infrastructures high enough to contain the growth and size of the plants during a cycle crop, which is possible in most of the greenhouses of the horticultural production model of Almería. The papaya harvests obtained in the region meet the quality requirements demanded by European markets. Furthermore, yields obtained are equal or higher than yields obtained by other producing countries. This crop improves profit compared with the profit obtained from the rotation of other horticultural crops that have been traditionally grown in the region.

Results have demonstrated that papaya cultivation under greenhouses in Almeria region is feasible, with higher yield obtained than in other countries, with local mature commercial channels which have the know-how to sell exotic commodities complying with the European marketing standards. The cultivation of this fruit under greenhouses in Almería can be a rentable and commercial activity for farmers.

Source: *Mireille N. Honoré, Luis J. Belmonte-Ureña, Asensio Navarro-Velasco, Francisco Camacho-Ferre, 'Profit Analysis of Papaya Crops under Greenhouses as an Alternative to Traditional Intensive Horticulture in Southeast Spain', 2019, International Journal of Environmental Research and Public Health, 16, 2908.*

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