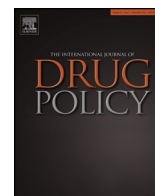




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## Research paper

## Cannabis cultivation in Spain: A profile of plantations, growers and production systems



Arturo Alvarez\*, Juan F. Gamella, Iván Parra

Department of Social Anthropology, University of Granada, 18071 Granada, Spain

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## ABSTRACT

**Background:** The European market for cannabis derivatives is being transformed. The cultivation of cannabis within the EU and the shift of demand from hashish to domestic marihuana are key aspects of this transformation. Spain, formerly central to the trade of Moroccan hashish, is becoming a marihuana-producing country. The emergence of “import-substitution” has been researched in other EU countries, but thus far the Spanish case remains undocumented.

**Methods:** This paper is based on analysis of data of 748 cannabis plantations seized by Spanish police in 2013. The sample comprises reports of seizures identified through a survey of online news and police reports. “Event-analysis” methods were applied to these sources.

**Results:** The analysis offers a typology of plantations, a profile of participants and the different production systems, and a model of regional distribution. Half of the plantations were small (less than 42 plants) and half contained between 100 and 1000 plants, with an average size of 261 plants. About three-quarters of plants were cultivated indoors using stolen electricity. 86% of all plants seized were from large-scale plantations (more than 220 plants). Most plantations were located along the Mediterranean coast, where population and tourism are concentrated. Over three-quarters of those indicted by police were Spanish (85%). Among the foreign owners of big plantations, Dutch nationals predominated. The number of seized plants by province was directly associated with the number of grow shops ( $\beta=0.962$ ,  $p < 0.001$ ).

**Conclusion:** The rise of large-scale cannabis plantations in the Spanish Mediterranean coast is increasingly replacing import of Moroccan hashish. Indoor cultivation supported by grow shops, that provide the technology and know-how, seem to be the dominant form of organization in this emerging industry. Large-scale plantations may have met most of the demand for marihuana in 2013.

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## Introduction

Cannabis derivatives are the most widely used illicit drugs in the world (Gowing et al., 2015; UNODC, 2015). These drugs used to be produced in developing countries to serve the demand of Western consumers. Today they are also priced crops grown illegally in the rich industrial world. Canada, Mexico and the US are now among the major cannabis producers in America, and Australia and New Zealand are described as close to self-sufficiency (UNODC, 2015). In Europe, countries such as the Netherlands, Belgium, Italy and the United Kingdom – formerly importers of cannabis resin – have developed their own marihuana-producing industries (Decorte, Potter, & Bouchard, 2011; Decorte, 2007, 2010; EMCDDA, 2012; Jansen, 2002; Kirby & Peal, 2015; Korf, 2011; Potter, 2008, 2010; UNODC, 2015; Wouters, 2008).

In Spain, the illegal production of marihuana seems to be increasing rapidly, and this may be connected to a decline in the export of Moroccan hashish. As shown in Fig. 1, between 2008 and 2014 seizures of cannabis resin decreased by 44% from 683 to 380 tons. In the same period, seizures of cannabis herb increased by 300% from 4 to 16 tons (EMCDDA, 2016a; Ministerio del Interior, 2015). Two developments may have contributed to this. Firstly, in 2005 the Moroccan government implemented a crop eradication programme, mainly in the provinces of Taounate and Larache. This resulted in a 46% decrease, compared to 2003, in the area devoted to cannabis cultivation in the Rif (Gamella & Jiménez Rodrigo, 2008; UNODC, 2003, 2005a, 2005b), with a further 19% decrease between 2005 and 2009 (UNODC, 2010). Other indicators support this decrease, for example between 2008 and 2010, the annual concentration of cannabis pollen grains in the province of Tetouan fell by 44% (Aboulaich et al., 2013).

Secondly, between 2002 and 2010, the Integrated System of External Surveillance was established along the Mediterranean coast of Spain. This air and sea detection and interception system

\* Corresponding author. Fax: +34 958 240932.

E-mail addresses: [aalvarez@ugr.es](mailto:aalvarez@ugr.es), [arturoalrol@gmail.com](mailto:arturoalrol@gmail.com) (A. Alvarez).

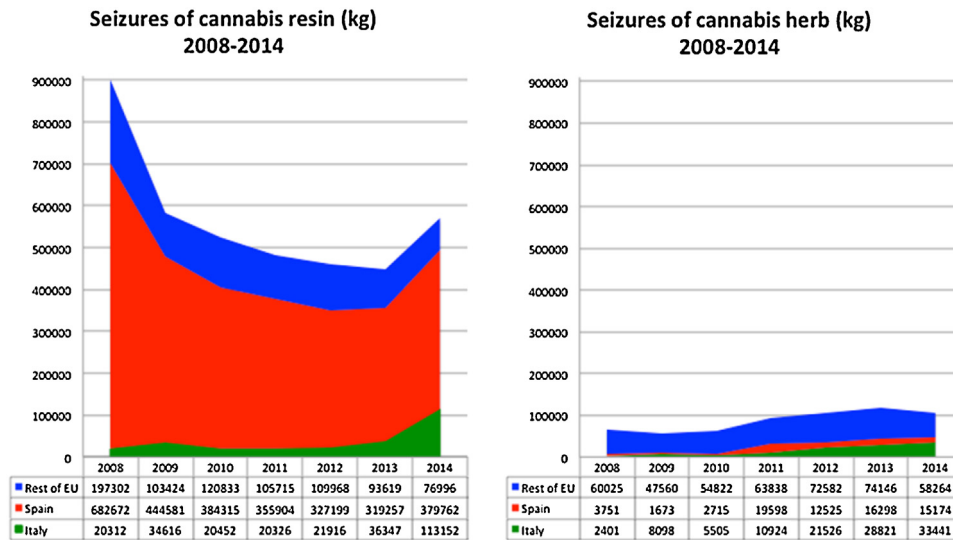


Fig. 1. Seizures of cannabis resin and cannabis herb in Spain, Italy and the rest of EU member states, 2008–2014. Source: EMCDDA (2016a).

was created to facilitate the surveillance of this border of the European Union. It has become an effective barrier against the smuggling of illegal drugs and the transport of irregular migrants (EMCDDA, 2012; Fernández Jurado & Sabariego Rivero, 2006).

Despite the decline in the area devoted to cannabis cultivation, Chouvy and Afsahi (2014) argued that hashish production may not have decreased as much as thought, as growers were substituting traditional kif cannabis varieties with more productive hybrid ones imported from Europe. In an interview in May 2016, an Andalusian wholesale dealer described to us how he had helped Moroccan growers to improve their plantations, and the help included the sale of thousands of imported seeds. As a result of these changes, the potency of Moroccan hashish may have increased. This is in line with the incremental rise in the level of THC observed in the cannabis resins seized recently in many European countries (Afsahi, 2015; Chouvy & Afsahi, 2014; EMCDDA, 2016b). Both the increase in productivity and in potency may have offset the decline in demand and contributed to price maintenance. Afsahi reported that some Moroccan growers told her they “were unable to sell their 2013 harvest because production exceeded demand, a direct consequence of European competition” (Afsahi, 2015: p. 328). Perhaps the increase in potency may partially explain the drop in the amount of hashish seized by Spanish police in the last decade.

At the same time, the supply of locally grown marihuana in Spain seems to have increased considerably. From 2008 to 2012 the eradication of cannabis plants by police forces increased by 67%, from 24 to 40 tons (EMCDDA, 2016a). The turning point in the emergence of this new industry seems to have occurred in 2013, at the deepest point of the economic crisis. From 2013 to 2014, seizures of cannabis plants increased by 54%, from 176000 to 271000 units (Ministerio del Interior, 2015: p. 408).

Moreover, the internal demand for cannabis remains high, with Spain showing one of the highest rates of cannabis consumption in Europe. A national household survey conducted in 2013 found that 7% of respondents had used cannabis in the past month and 2% used it daily (Fig. 2). Four years earlier, in 2009 these proportions were 8% and 2% respectively.

Based on consumption data, Caulkins and Kilmer (2013) estimated that 394 tons of cannabis were consumed in Spain during 2009. We have repeated these calculations using data from population surveys conducted in 2011 and 2013 (see Table 1). Our

**Prevalence of cannabis use (15-64 years old).  
Spain (1997-2013)**

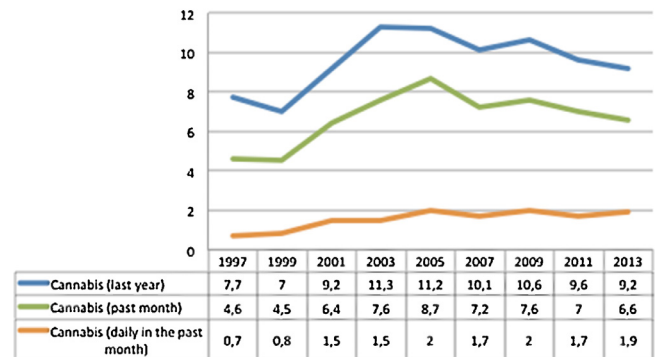


Fig. 2. Prevalence of cannabis use in Spain. Total population 15 to 64 years of age (1997–2013). Source: elaborated with data from EDADES (1997–2013), the Household Survey on Drugs and Alcohol in Spain.

results show that in recent years, the number of past month users decreased by 14%, but the total amount of cannabis consumed in the country only decreased by 2%. It seems that the proportion of experimental and occasional users has decreased, while that of regular and intensive users has remained constant or increased slightly. These types of user consume larger amounts of cannabis on average (van Laar, Frijins, Trautmann, & Lombi, 2013; Zeisser et al., 2012).

Additionally, according to data provided by the Spanish Ministry of Interior, retail prices of both cannabis resin and herb increased from 2009 to 2012 and then decreased. Wholesale prices of marihuana fell from 2002 to 2008, increased from 2009 to 2011 and then started to fall again (see Fig. 3). Prices of hashish also fell from 2002 to 2006, but have remained constant since. The price increase of herb from 2008 onwards could be seen as a response to the growth of demand, until local supply also increased to meet the rising demand. There are independent signs for this. For instance, the annual rate of atmospheric pollen of cannabis detected in the province of Malaga tripled in this same period (El País, 17-09-2014). The change of price could also reflect a change in the mode of marihuana production and on the quality/potency of cannabis.

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