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## Hemp, a borderline crop to diversify Sicilian food systems

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### 1 Introduction

Despite its wide known benefits, crop diversification struggles to be put into practice (Meynard et al., 2018). Such slow development can be explained by a situation of socio-technical lock-in, which means that various interdependent barriers to diversification exist at different level of the food systems and reinforce each other (David, 1985; Vanloqueren and Baret, 2008; Meynard et al., 2018).

The DiverIMPACTS case study on “Diversification of durum wheat cropping systems in semi-arid environment with sulla clover, hemp and chickpea” aims to identify optimal options for the Sicilian arable systems, leading to the identification of crop diversification options to be tested. Notably, the inclusion of hemp in the farm rotation has been considered for its potential at field and value chain scale. Yet, despite its promising agronomic role and marketing possibilities, currently the object of a rediscovery after decades of neglect, hemp development is still limited in Italy because of long-lasting anti-drug policies and suspect at social and institutional levels.

### 2 Materials and Methods

To determine the case study’s room for manoeuvre in relation to hemp cultivation, processing and marketing, a preliminary exploration has been carried out to gather and analyse a typology of possible barriers that could together contribute to a lock-in situation.

### 3 Results

A first set of barriers relates to the agronomic dimension. As hemp has not been cultivated for decades in Sicily at significant scale, crop-specific expertise lacks among most operators. The genotype (un)suitability represents an additional relevant obstacle as the varietal offer, already limited, is not appropriate to Sicilian pedoclimatic conditions. Similarly, appropriate machinery for harvesting and post-harvesting needs is unavailable: combine harvesters commonly used for wheat are generally adopted for hemp, yet unfit for fresh and tenacious straws, given that the limited scale of cultivation hinder investments.

A second set of possible barriers relates to the ‘hysteric’ climate still surrounding hemp in Italy. Despite a recent legislative evolution, marked by the law 242/2016<sup>4</sup> regulating the cultivation, transformation and sale of hemp and hemp derived products, uncertainties persist among Italian operators. The law foresees a tolerance threshold for THC inferior to 0.2%, with a tolerance up to 0.6%. Farmers that grow varieties registered in the seed catalogue, showing evidence of the seed purchase, would be considered non-responsible for the possible THC escalation beyond that regulatory perimeter, but they may not sell the produce should the THC content escalate above the tolerance threshold.

These concerns are also in relation with the scientific-politics interface, which represents a third area of uncertainty and aleatory prospects. The National Health Council, the Health Ministry scientific advisory body, issued in April 2018 a recommendation inviting the government to ban the sale of products containing THC in any percentage. Moreover, despite prescribed by the national law 242/2016, only in late 2018 the Italian Health Ministry has notified to the EU Authorities the draft Regulation<sup>5</sup> on THC maximum contents in food, which anyway results quite restrictive for the Italian agro-climatic conditions. Finally, on the scientific-regulatory domain, research has not yet indicated to what extent and in which conditions THC content may escalate in different hemp varieties beyond established limits.

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4 Law 242/2016 - Provisions for the promotion of cultivation and the agro-industrial chain of hemp

5 Italian Ministry of Health (30/10/2018) Draft Regulation laying down the definition of maximum levels of tetrahydrocannabinol (THC) in food

This particularly applies to farm saved seeds for which a possible THC level increase is expected. As the case study already faced agronomic problems in relation to a late availability of seeds and seed saving has been considered a viable option to test more timely sowings, the case study has engaged a dialogue with the Ministry of Agriculture to get written permission for seed saving as a derogation attributed to a European research project, which was finally conceded with limitations to less than one hectare for each case study farm.

A final category of barriers is related to the fast-developing market for hemp and hemp products that – counterintuitively - represents an additional uncertainty for operators. Hemp-dedicated shops flourished in 2018, mostly due to the smoking attractiveness, providing integrative commercial space for food and beverage products based on hemp flowers and grains; thus, in the last two years seed traders and other hemp dealers have disseminated prospects to farmers that promised remunerations up to 30.000 € per hectare for hemp flowers, attracting some improvised operators in the business.

#### **4 Discussion and Conclusions**

The variety and unpredictability of all mentioned barriers result in indeterminate conditions for the hemp value chains scalability at regional and national levels. Their market development remains fuzzy and difficult to predict under the current regime, requiring more research and regulatory clarity.

#### **References**

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