PERI-URBAN AGRICULTURE LANDSCAPE UNITS (USAPUS):
A METHODOLOGICAL PROPOSAL TO CHARACTERIZE
AGRICULTURE IN URBAN PLANNING

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Urban growth is encroaching onto farmland, especially in the Mediterranean basin. City seems to influence most peri-urban farms, or at least to have an impact on farmers’ lifestyle. The concentration of food consumers, customers and other activities in urban areas generates new and promising opportunities of specialization rather than anticipation to urbanisation and short-term strategies based on land use conversion from agricultural to urban. Besides, credited benefits of agriculture multifunctionality legitimate protection of peri-urban agricultural land use in planning (Fleury, 2001). Nevertheless, operational frameworks considering all the stakes specific to peri-urban agriculture and practices for supporting spatial management decisions and food planning may be improved (Galli et al., 2010). Periurban agriculture is usually located in relation to the distance of city-center, in a gradient inspired from Von Thünen's model (1826) (Sinclair, 1967; Bryant and Johnston, 1992), where relations with the city are presumed (Nahmia and Le Caro, 2010; Zasada, 2013). But the distance factor is not enough to characterise periurban agriculture, which is diverse, plural and dynamic (Bryant, 1997; Paül Carril, 2006; Soulard, 2014).

This work presents a methodology to locate, characterise and represent peri-urban agriculture in order to integrate agricultural issues in urban planning. Our objective is to define a systemic and generic methodology, operational for public managers and planners, which can be usable in different case studies or territorial levels. The goal is to construct spatial units of periurban agriculture (USAPU), which could be used as a characterisation and management tool for policy-makers and urban decision makers. USAPU are local spatial entities that are homogenous in terms of both farming and urban uses and layout, with a systemic vocation and statistically defined, combining variables from a wide range of disciplines (geography, economy, agronomy, regional science…), to represent periurban agriculture. We place our work in the framework of geoagronomy (Deffontaines et al., 1995). Moreover, agriculture is considered in its productive dimension, not only as an open space, as is often the case in landscape approaches of spatial planning.

We have developed our approach from the exhaustive analyse of a study case around Avignon urban area, presenting a scattered urban development based on individual housing. We have proceeded in three successive stages, at two levels of public action. First, we have carried out comprehensive and spatial analyses at local level to delimit and characterise USAPU, combining various methods: on-site landscape reading, fieldwork and interviews, photo-interpretation and diachronic remote-sensing analyses of land-use changes. Second, we have statistically analysed the USAPU characterisation by a set of variables, to find out ten
determinant variables explaining the variance between the USAPU. Third, we have carried out a probabilistic analysis at the province level (similar to NUTS3), by the means of a Dirichlet-multivariate fractional model. The results of applying such a methodology were optimal for Avignon study case. We further tested the same approach to another study case around Madrid metropolitan area, presenting a compact urban development based on programmed collective housing, and therefore very contrasted with Avignon study case. The resultants were also optimal, validating thus the methodology construction and confirming its robustness reliability in different urban and agricultural contexts.

Besides, our findings show that determining factors explaining the distribution of USAPU are several including agro-ecological conditions, local history (urban development, economic organisation, agricultural sector organisation) and public environmental regulations. The distance from the reference city-centre can delimit spaces in the periurban where agriculture is possible, but this factor does not explain the distribution of different forms of agriculture inside these spaces.

Finally, our methodology enables the discrimination between productive agricultural spaces oriented by farming sector logics, and those sensible to urban influence and which be potentially reactive to public actions emanating from urban communities. In this perspective, the methodology is an operational tool allowing planning at two proper levels for institutional projects: the local level of spatial planning, and the province or regional level of strategic and sectoral activity planning.

References