

TWO SCALES APPROACH TO CHARACTERIZE FARMERS' PRACTICES

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INTRODUCTION

The wide diversity of French agricultural production sector leads agronomists to produce tools dedicated to categorise farms diversity. These typology methods are supposed to improve the efficiency of technical advisors helping them to adapt advice on techno-economic issues to the different production contexts (Capillon 1993). It also aims at helping agricultural policies. However the typological approaches dedicated to the comprehension of the conditions of appropriation of new techniques are rare. Nevertheless, characterization of farmer practices diversity is a preliminary to evaluate cropping systems, their environmental impact, and finally to rebuild crop management with producers. Agricultural practices result from choices carried out both at the field and at the farm scale. It partly depends on the priorities of the farmers and the way in which he allots the factors of production to the various components of the farming system (Papy 2001). Consequently, which would be the operational value of a diagnosis resting only on the observation of the practices without taking account of the context in which they are implemented ? Then, to be operational, the phase of diagnosis must hang in account data resulting from global farm functioning. For this purpose, certain method mix both types of data, i.e. crop management sequences and global farm functioning, allotting to each one an arbitrary weight (Köbrich et al. 2003). In order to maintain the wealth of information and to guarantee the operationnality of typology, we propose a diagnosis tool which integrates independently field and farm scales (Michels 2005). Our objectives are (i) to build up farm types around "aggregation poles" (Girard et al. 2001; Girard et al. 2008; Perrot 1990), (ii) to involve advisors in the typology process, and finally (iii) to identify practices diversity and to give sense to the existing practices.

MATERIALS AND METHODS

By means of survey and modelling, our method aims at answering two questions: what do farmers use to do on their fields and what is the context of their activity ? One part of the survey aims at revealing agricultural practices at the field scale, the other one analyzes the relationships existing between crops and the global farm functioning. On each information field, a typology is carried out following five stages: (i) laying down of the objectives with the advisors and and development of a sample aiming at maximizing diversity, (ii) carrying out the surveys, (iii) developing in a participative way prototype attributes and their modalities, (iv) formalizing typology using three multivariate analysis methods (v) crossing the two typologies in order to replace practices in the context of their implementation. The prototype attributes is represented as a bipolar axis presenting, in an ordered way, combinations of practices observed between two logics opposed on a given topic. The prototypes are built combining the different attributes and their modalities, using two methods of multivariate analysis (MCA and hierarchical clustering). Then Fuzzy analysis allows us to measure the resemblance between each farm and the prototypes resulting from typology.

RESULTS AND DISCUSSION

Figure 1 illustrates the result of such a typology process in the case of three emerging "prototypes" or "pole". Each pole is characterised by a set of attribute modalities and must be named by an expression

summering the main strategy underlying the crop management for the field scale and the global functioning for the farm scale. Each surveyed farm can then be “located” compared to the various poles, offering the vision of a not partitioned typology. Each farm is thus characterized by two profiles and can be positioned compared to the various poles within each typology. That makes it possible to distinguish the exploitations implementing the same practices in completely different contexts. Such an approach give sense to crop management observed bringing some indications about the production context. Taking into account this double featuring allow advisor to adapt technical advice. Overlapping these two typologies provides basic knowledge to build a relevant network of reference farms. We consider this method as a required step to assess farms sustainability and necessary conditions to transfer new cropping systems.

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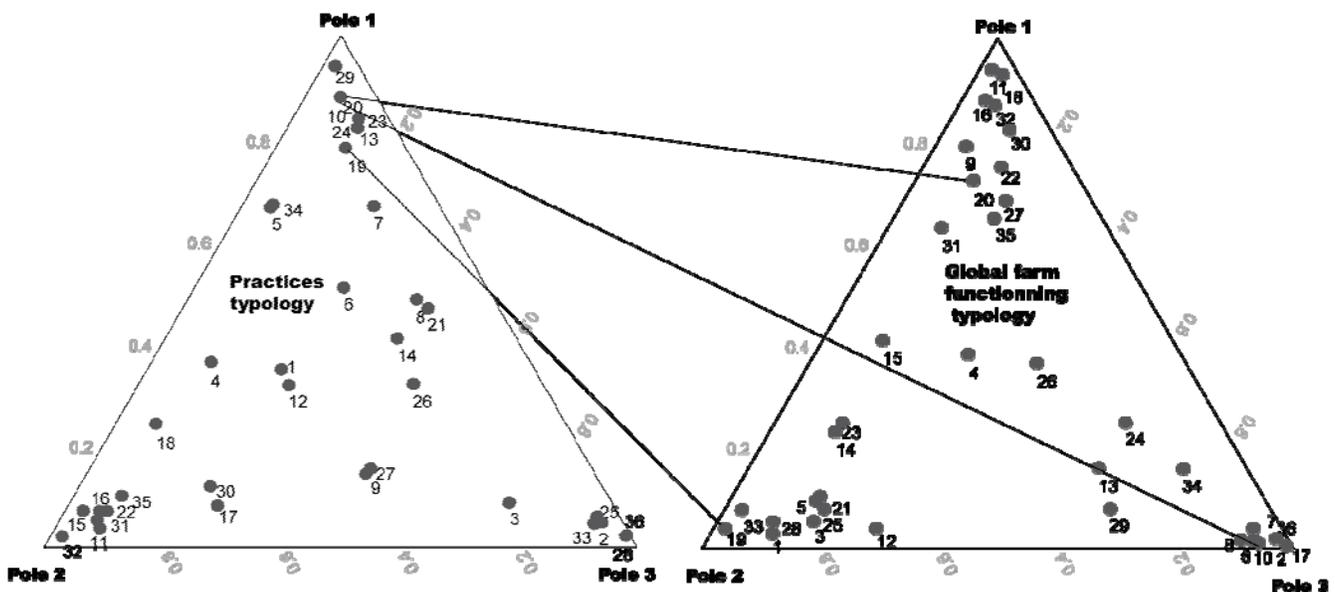


Figure 1 : results of double typologies carried out on the same sample of farms showing for the same crop management the diversity of the context of production