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## **Agri-environmental policies and protected areas: a case study in the "Parco del Taro", Parma (Italy)**

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## **Agri-environmental policies and protected areas: a case study in the "Parco del Taro", Parma (Italy).**

### **ABSTRACT**

*Agri-environmental policies play a growing role in the new EU agricultural policy. The re-addressing of technology is particularly important in specific protected areas, which existence and interest is often linked to typical agricultural systems and local productions.*

*The objective of the study is to understand the factors affecting the choice of participating in regulation (EEC) 2078/92 by the farmers in the area of the "Parco del Taro", Parma, Italy, with the aim to identify guidelines for policy changes. The analysis has been carried out through interviews supported by questionnaires and the data arising have been elaborated through a cluster analysis.*

*Different groups of farmers have been found, with specific attitudes towards agri-environmental policies, park's institutions and technological orientation. Farmers' behaviour and motivations let think that the application of agri-environmental policies will need stronger differentiation of policy measures, better information and higher integration among institutions intervening on the area.*

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## **1. OBJECTIVES AND BACKGROUND**

The changes in perspective that the Common Agricultural Policy (CAP) has shown in the last years are creating an extremely dynamic and complex scenario, requiring fast adaptation by farmers. On one hand, the decoupling between economic policy and social policy objectives tend to produce a growing liberalisation of agricultural policy, through the reduction of guaranteed prices. On the other hand, some very specific points of agricultural policy, such as the pushing towards quality improvement, the growing demand for environmentally friendly technologies and the growing attention towards social cohesion objectives, through the promotion of rural development, are becoming more and more important.

These trends are particularly concentrated in some protected areas of Emilia-Romagna, especially lowland fluvial areas close to human settlements, where a very differentiated combination of (often conflicting) agricultural policy objectives can be found, linked to the following elements: i) the presence of a traditionally profitable agriculture; ii) the presence of consolidated typical productions; iii) the necessity to reduce the pressure of agriculture on natural resources; iv) the necessity of an equilibrated development of agricultural landscapes, strictly linked to countryside-town tensions.

Facing a complex and continuously changing reality, farms react to agricultural policy intervention in a very differentiated way, much less homogeneously than is usually assumed by economic efficiency and profitability-oriented models. On the other hand, heterogeneity seems to be a pervasive characteristic of farming throughout all Italian agriculture [6]. The multiplicity of physical-geographic conditions is crossed with other dimensions of heterogeneity. In the past decades, the structural and technological differentiation of Italian farms, based on the dualism between household and capitalistic farms, has been the object of a lasting and intense debate [4; 5; 10; 11]. New dimensions of the heterogeneity of farming enterprise, more recently become object of research, can be found in the sphere of the relationship between the farm and its environment (relationship with organisms for product transformation and commercialisation, with services supplier, with public institutions, etc.) and in the sphere of individual behaviour of the farmer and his household [6]. In relation to the last point, there is a growing interest in studying how personal values and individual attitudes, such as professional and entrepreneurial attitudes, can affect farmer's behaviour and choices.

Quoting only a little part of the literature about this topic, this approach has been used to study the adoption of soil conservation technologies [13], farmer's behaviour in transition to the post-productivism [9; 20; 21], the relationships between external information and embodied know how in rural development [17; 18], the attitudes towards the reorientation of rural landscape [23] and information technology application in agriculture [12]. In each one of these works, several farmer typologies, with a different approach to farm management, were selected. For example, Volker [23] identifies four categories of Dutch farmers, substantially originated crossing two variables: i) mono/multi management goals; ii) willingness to adopt technologies with a low impact on the landscape. Two profiles are opposed to the technological adjustment (businessman and conservative farmer), while two are possibilist (pragmatic manager and pragmatic farmer).

Oriented in this direction, the study illustrated in this paper aims to contribute to identify some farmers' behavioural approaches facing the choices concerning agro-environmental measures. The analysis refers to a fluvial protected area of the Emilia-Romagna region (Italy), named "Parco del Taro". As in several other protected areas, in this park there is a strong concentration of proposals for technological adjustment to improve the preservation of natural resources (accompanying measures of CAP Reform, park's rules, etc.), the quality of production (specifications of typical products, like "Parmigiano-Reggiano" cheese), and rural development.

Empirical observation in this area shows that farmer's reactions facing agri-environmental constraints are influenced not only by his economic aims, but also by his own "world vision" and "farming style". In other words, this behaviour does not tallies necessarily with the economic optimum, that is identified, by the predominant vision of the agricultural public institutions and extension services, with the "peak farmer" [24]. From a practical point of view, this flattening conceptualisation of the farmer determines a lack of supply of agri-environmental measures, compared to the real needs of the area.

On the basis of a field research, combining structural variables with individual attitudes in order to accept or to refuse the park introduction and the reg. (EEC) 2078/92 agri-environmental constraints, some farmer types has been identified. We argue that the awareness of this type of heterogeneity, especially concerning farmer's mental habitus, could give the public decision maker the capability to improve policy measures. These adjustments could encourage the participation to agri-environmental programs and increase, on one hand, social benefits due to environmental externalities, and, on the other hand, a better use of public funds aimed to support farmers' income.

## 2. METHODOLOGY

In any economic analysis, discussion or modelling, assumptions are needed about actors' behaviour. The standard solution to this problem is to assume an homogeneous behaviour, based on the assumption of profit or utility maximisation.

Economic research development has nevertheless made more and more relevant the criticisms of these assumptions, giving rise to innovative approaches to the theory of entrepreneur behaviour such as the shift from the "absolute rationality" approach to the "bounded rationality" theory and the "art of muddling through" approach [6; 22].

Many elements can actually be used in order to describe and differentiate such behavioural assumptions; among the most frequently adopted we can found:

- the kind of objectives (profit, risk, others);
- the degree of information;
- the mechanisms through which decisions are taken (maximisation, satisfaction);
- the structure of alternatives (continuous action, discrete strategic alternatives, etc.).

These diversities must be taken into account as they help in understanding the actual behaviour of the sector and allow, in principle, to define different "types" of economic actors and, for our purposes, different kinds of farmers [2; 21].

Taking into account such different behaviour options is particularly important when trying to find explanations for on field surveyed decisions related to issues where informational or prejudicial issues play a major role. This is also true in agriculture, in particular when the object of analysis are voluntary schemes for environmental protection.

The attempt to identify different farming styles derives from the application of psychological and sociological concepts in economics [13] and represent the methodological basis for this paper.

The basic assumption of this work is that farmers behave on the base of *attitudes*, which give rise to behavioural patterns (*habits*) that are rather constant over time. These attitudes ( $A_i$ ) couple with farm structure factors ( $Fs_i$ ) and external factors ( $E_i$ ) in determining the reaction to policy interventions, such as park creation and agri-environmental policies, for any farmer  $i$ .

This variables can be interpreted as determinants of farmer's utility function [13]:

$$(1) U_i = (A_i, Fs_i, E_i).$$

On field research about farming styles can use different methodologies and statistical tools. Generally speaking, if the main interest is to *identify* farming styles, a methodology able to create distinct sets of farmers on the base of a number of variables is required. In this case, multivariate techniques can be used such as cluster analysis.

If the groups of farmers have already been identified and the problem is to *interpret or to model* their behaviour, for example in relation to given policy measures, standard functional models can be used (i.e. tobit models), just differentiating their estimation for each group of farmers

The former approach has been applied in our case with the aim to identify discrete behavioural strategies in relation to the creation of the park and in reaction to the application of reg. (EEC) 2078/92 in the study area [3].

The survey unit is the *farm household* [1], and not just the farmer, because his behaviour streams from the family context in which it is cast and because frequently the whole household participates in farm management.

Household behaviour is assumed to be conditioned by two categories of variables:

- external factors ( $E_i$ ), pertaining to the socio-economic context (park institutions, reg. 2078/92);
- internal factors ( $A_i, Fs_i$ ), such as personal opinions, household and farm structure, labour organisation, farm management and strategic choices.

The aim of the analysis is to identify and describe groups of homogeneous farms as structural-organisational characteristics and strategic behaviour are concerned. This is important as long as different actions arise from each one of such groups [14].

The categories adopted in this study for the classification of farming styles have been adapted to the specific problem analysed<sup>1</sup>, i.e. the attitudes towards the park and in relation to reg. (EEC) 2078/92.

Data have been obtained through a survey based on interviews supported by questionnaires proposed to the whole population of farmers in the territory of the park. Questionnaires include variables such as farm structure, household structure and farmer characteristics. In addition, some questions of the questionnaires are specifically aimed to focus on the relationship between agriculture and the environment

Altogether, while the study is somehow in the middle between a sociological and an economic approach, the kind of variables shows a certain prevailing of the first discipline. In this context qualitative factors have been widely considered, trying to exploit the opportunity to discuss directly with the farmers the issues analysed.

The farms involved in the park are 67, on a total surface of about 2600 hectares. Surveyed data relate to 48 farms with land in the park area, corresponding to 72% of the whole population.

The groups have been identified using a cluster analysis<sup>2</sup>. This technique allows to obtain, from a given population  $A$ , of  $n$  observations, a certain number of sub-sets differentiated on the basis of a set of  $q$  indicators.

The variables adopted as indicators are listed in table n.1. The variables are quantitative and have been standardised on the scale 0-1, but not different weights have been used.

The observations included in each group are characterised by the regularity of behaviour of the variables assumed as indicators. An aggregative hierarchical algorithm has been adopted, using the square Euclidean distance as measure of distance while the technique of Ward has been used for group identification (see [19] and [15] for further specifications).

### **3. RESULTS: FARMING STYLES AND BEHAVIOUR TOWARDS PARK INSTITUTIONS AND AGRI-ENVIRONMENTAL POLICIES**

The results of the study concern both the global attitude of farmers towards park institutions/reg. (EEC) 2078/92 and the differentiation of such attitude among groups.

While it is possible to argue that the presence of the park can help in promoting environmentally friendly techniques, a distrust, if not hostile, attitude in relationship to park's institution has emerged by a relevant share of farmers. In fact, 44% of the sample is opposed to the creation of the park, 40% refuses to give a judgement and 12,5% expresses a positive opinion, both because they believe to be able to obtain benefits from the existence of a protected area and/or for a prejudicial attitude towards the environment. This situation does not seem to be favourable to the introduction of agri-environmental measures.

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<sup>1</sup> Different categories have been proposed in the literature for the classification of farmers' behaviour. The criterion is, in turn, the prevailing objective of the farmer [6], the strategic approach [14], the level of "exclusivity" of farming activity [16], the sector of farming on which the attention of the farmer focuses [12].

<sup>2</sup> The elaboration has been carried out using SPSS (Statistical Package for the Social Science).

Such measures are known by 71% of the farmers (the remaining 29% has never heard of them). According to the farmers, the quality of information about reg. (EEC) 207/92 is quite low. Among them who heard of it, 50% judge this information not clear, 29% sufficient and 21% good.

As regards the interest for the proposals, 37,5 % of the total, i.e. 18 farms, state to be willing to participate in the regulation while 62,5% declare to have no intention to introduce reg. (EEC) 2078/92 in their farms.

The cluster analysis has led to the identification of 4 groups of farmers showing different attitudes towards both park's institutions and the proposal to participate in reg. (EEC) 2078/92, together with different farm and household structure (table n.2.).

#### *Open farmers (16 units)*

Open farmers run medium-large farms (medium size 42 ha), with cattle rearing. Farmers are relatively young (average age: 50 years) and work full time in the farm, using almost exclusively household workforce.

They try to couple an efficient use of labour and machinery with traditional production techniques (cereal-fodder plant rotations and "Parmigiano-Reggiano" cheese production). They pay attention to innovations and are willing to invest in the farm; this aspect is strengthened by the fact that the household include youths intending to prosecute the farming activity and that household's income arise almost completely from the farm.

With respect to the problem of agriculture-environment relationship, this cluster is characterised by a cautious opening both towards forms of collaboration with the park and towards the application of reg. (EEC) 2078/92: 50% of the farmers are interested in the regulation while 1 application was already submitted by a member of this group.

A1 and B2 are the actions for which the maximum propensity is expressed, mainly because they are considered easily feasible (a recurrent motivation is "I already do it") and able to guarantee satisfying productive results.

#### *Businessmen (4 units)*

The farms managed by this category of farmers are characterised by large size (average size: 103 ha) and resort to hired labour (household workforce is just 18% of all labour requirement; mostly due to farmers holding managing functions).

Like in the preceding cluster, farmers show propensity to invest and all households include youths willing to continue to run the farm.

Contrary to the preceding group, instead, "businessmen" express a negative judgement about the park, and regard agri-environmental measures as useless for their farms, because they are of negligible economic dimensions and, in some cases, in contrast with the high efficiency and the strong productive objectives of this group.

#### *Autarchics (16 units)*

The name attributed to this group summarises its more evident characteristics, i.e. the strong desire for autonomy, the sticking to tradition and the low attention towards any proposal implying changes in their own organisation.

The park is viewed as a negative reality, source of constraints, while the proposals of reg. (EEC) 2078/92 are even not considered.



### *Agri-environmental policies*

The motivations for such closeness are partly due to farm structure, as they are medium-small farms (average farm size: 16,71 ha), practising cattle rearing in only 50% of the cases.

The advanced age of farmers is also significant (average 63,31 years) as well as the lack of certainty about succession. This leads such farmers to strongly contain investments and to maintain a productive structure as stable as possible over time.

#### *Residentials (12 units)*

For this category, farming is a secondary activity. Only in two cases the farming represents the basis for household income, while for the others the importance of social transfers (76% are retired) and of extra-farm activities (56% of cases) is preponderant. As a consequence, this typology ascribes primarily a residential and/or an investment or family tradition function to the farm.

The farmer devotes little time to farm work, also because these farms are usually small (average size: 8,1 ha) and, with two exceptions, they do not practice cattle rearing. Farmers try to contain farming costs by circumscribing investments to the substitution of unusable machinery and to buildings maintenance.

Agri-environmental measures receive great attention by this group (3 out of 4 applications presented in the park are from "residential"; another one of them produces following organic farm practices). In fact, they think that such proposals represent a good way to integrate the slender farm income and, at the same time, contribute to improve the environment in which, for choice or tradition, they live.

## **4. DISCUSSION**

The integration between agricultural activities and the environment represents a primary importance objective inside a protected area. Nevertheless, the degree of integration between park institutions, environmental policy and farmers' disposition to act seems to be quite weak, both for short term reaction to new policy measures and for the long term learning process.

Yet, from this point of view, the target of agri-environmental policies is not unique, generic and undifferentiated. Even considering a limited sample, the cluster analysis has brought to the definition of 4 kinds of farmer having different characteristics, partly depending on farm structure and partly to personal and household attitudes. Rather interestingly, while motivations for not participating in park/regulation activities seem to be rather straightforward, the picture is much less clear about farmers' willingness to participate, showing a strong need of further research about the actual structure of farmers' incentives and the proper way to intervene in order to modify them according to environmental purposes.

This analysis allows some policy recommendations. First of all, it is possible to argue that a better valorisation of this area could be obtained through an approach taking into account the heterogeneity of interlocutors, based on policy measures as much as possible modulated in function of potential users.

The differentiation of the measures and the information approach can be considered the two main elements of such modulation.

The more important aspect concerns the content of the proposals. As the group of the "businessmen", that, together with the "open farmers" represent the more vital and enterprising farms in the area, is concerned, the participation in reg. (EEC) 2078/92 could become interesting if economic profitability should prove to be clearly significant. Due to the organisational capability of these farmers, together with measures aimed to promote environmentally friendly agriculture, this cluster could address initiatives linked to the recreational use of the area (agritourism, local products, etc.).

As regards the group of the "autarchics", a future involvement could be supported by overcoming the distrust of such category towards the introduction of innovative elements potentially limiting their farming activity: the problem is to show in practice that the park is not just a constraint, but could become a resource. This could be obtained, for example, by starting, in the area, demonstration projects of conversion towards environmentally friendly agriculture. These actions are already provided for by reg. (EEC) 2078/92, but they have found little application up to now in this area.

Finally, the research has shown that the category of farmers more interested in the application of reg. (EEC) 2078/92 are to be found in the "residential" and in the "open farmers".

With respect to the former, mainly pluriactive and smaller farms, the agricultural production activity is of secondary importance in relationship to other activities: as a consequence the regulation proposed can represent a good occasion for integrating farm's income, particularly if the constraints proposed can be accomplished without a relevant use of labour. With this typology of farmers, the park could set up agreements concerning landscape upkeep (measures D1 and F) and recreational activities (measure G).

As "open farmers" (directly managed professional farms) are concerned, on the contrary, higher attention should be paid to the conversion towards environmentally friendly production techniques, thus concentrating on measures such as A1, A2 and B2, while guaranteeing the continuation of the important productive role they play, although in the limits of park environmental objectives.

These different attitudes of farmers could make very useful the use of management agreements negotiated on an individual basis. This solution, that would maximise both participation and environmental impact, is likely to be too expensive to be put into practice. A compromise solution could be the collective negotiation for the setting up of a co-ordinated but differentiated policy application throughout the park.

As the information issue is concerned, the research highlights that the diffusion of information about the working of the park and of reg. (EEC) 2078/92 is qualitatively and quantitatively weak, while closeness and distrust towards the park and reg. (EEC) 2078/92 are rather common among farmers, though with different degrees. In addition, some categories of farmers tend to exclude themselves from informational circuits; in particular, the group of the "autarchics", hostile to everything concerning the park and to which conservative farmers, of which many are also aged retired, belong.

For all farmers, and for this category in particular, it would be preferable to use, as information channel, people holding the confidence of the farmers i.e. the advisers of farmers' organisations instead of park's personnel.

Nevertheless, the effectiveness of informational actions at large requires a more wide vision of change in technology, through a more direct involvement of all actors surrounding the farming activity. From this point of view, both the park and reg. (EEC) 2078/92 are quite lacking, as they address farmers mostly as an isolated layer of actors. In particular, it would be desirable to arrive to stronger links with agri-food industry and transformation activities aimed to the qualitative valorisation of the products obtained in the park and pre-park area (first of all "Parmigiano-Reggiano" cheese), by promoting an image of healthiness linked to the adoption of production techniques compatible with the environment.

This approach could lead to the achievement of a twofold objective: the conservation of an agricultural production of relevant tradition and quality, and the contemporaneous improvement of economic vitality of the whole agricultural system, able to exploit naturalistic and recreational features of the area without incurring in non-sustainable use.

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