

Science for Environment Policy

Sustainable agriculture with profitable farming and biodiversity conservation

A framework to combine economically viable agriculture with effective biodiversity conservation has been described in a recent study. According to the researchers, their approach provides a simple guide designed to help planners and farmers achieve sustainable agriculture.

Modern industrial agriculture, characterised by intensive farming, has been identified as a major cause of declining biodiversity in farmlands. Nevertheless, the world's growing population has to be fed, and a balance must be struck between the ecological and economic objectives of managing farmland.

Economic public policies can help limit the decline in **biodiversity** by influencing the choices that farmers make about **land use** and farming practices. This study assessed how two seemingly contradictory objectives—conservation benefits and profitable farming—can be simultaneously satisfied through policy measures that provide financial incentives.

The researchers used bioeconomic modelling to identify public policies that satisfy both **economic** and biodiversity demands for the period 2009 to 2050. The model incorporated three components: financial incentives at a national scale, changing agricultural land use according to farmers' decisions and population fluctuations of 14 generalist and 20 specialist farmland birds. The researchers applied the model to all 620 small agricultural regions (SARs) in France.

The framework developed in this study, namely the coviability approach, aims to meet different constraints related to different viewpoints at the same time. Thus, instead of looking for the optimal trade-off between economic and conservation objectives, as is often the case, it can be used by decision-makers to define financial incentives that simultaneously satisfy different restrictions, including budgetary, farming income and ecological constraints.

The results provided a range of alternative decisions that could be implemented. Each of these satisfied environmental and economic objectives over the long term, which implies that they would be sustainable.

The study shows that a combination of taxes on crops and subsidies for extensive and semi-extensive grasslands form the basis of these viable policies, as evidenced by their effect on the different pillars of the Common Agricultural Policy (CAP). According to the researchers, the results imply that current subsidies on croplands in the first pillar of the Common Agricultural Policy could be decreased, while the second pillar subsidising extensive grasslands could be expanded. In other words, the authors highlight the joint value of the two pillars for promoting sustainable agricultural practices.

Moreover, the framework is flexible enough to include other constraints, such as social objectives, that make the policies more acceptable, for example, by redistributing budget gains to farmers with higher costs or losses due to crop taxes incurred as a result of the implementation of public policy.

The researchers highlight that the coviability framework is a suitable method to address sustainability issues that involve a range of stakeholders, with sometimes contradictory views. Furthermore, they argue that viable current public-policy decisions identified by this method promote equity between present and future generations, which is consistent with the definition of sustainability.



10 April 2014
Issue 369

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Source: Mouysset, L., Doyen, L. & Jiguet, F. (2013). From Population Viability Analysis to Coviability of Farmland Biodiversity and Agriculture. *Conservation Biology*. 28(1): 187–201. DOI: 10.1111/cobi.12184.

This study is free to view at: <http://onlinelibrary.wiley.com/doi/10.1111/cobi.12184/abstract>

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To cite this article/service: "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

