Integrating agroecology into European agricultural policies

Position paper and recommendations to the European Commission on Eco-schemes

AGROECOLOGY EUROPE

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Foreword

On January 14, 2021, the European Commission published a list of agricultural practices that could be supported through the Eco-schemes to be put in place by EU Member States. This list aims to contribute to the debate on the reform of the CAP and its role in achieving the objectives of the Green Deal and the Farm to Fork Strategy.

Agroecology Europe seizes this unique opportunity to update its recommendations and participate in this crucial debate, at a time when the agricultural sector must offer a range of solutions to the social, environmental and economic challenges facing Europe today.

Efficiency, Substitution and Redesign: the three levels of the agroecological transition

Hill (1985) and Gliessman (2016) distinguish three levels in the process of transitioning agricultural production systems from so-called conventional agriculture to agroecology: efficiency, substitution, and redesign of production systems (Figure 1).

The first step consists in improving the efficiency of industrial and conventional practices by decreasing wasteful and often environmentally damaging inputs like synthetic fertilizers and pesticides (Gliessman 2016). The second level of transition is to substitute synthetic commercial inputs with organic or biological inputs (e.g. biostimulants, biopesticides). The third level of transition is to redesign the agroecosystem holistically so that it functions on the basis of a set of ecological processes driven by diversification strategies at whole level, with minimal use of external inputs. In this way, the structure of the agroecosystem is profoundly changed, with diversification leading to a strong reduction or elimination of some of the problems that farmers commonly face in their production systems: declining soil fertility, weed competition, pest and disease outbreaks, water consumption, as well as economic, social and cultural constraints.

Figure 1 illustrates the different possible levels of the transition process. At the bottom of the figure, different systems (e.g., precision agriculture, conservation agriculture or organic and biodynamic agriculture) are positioned with respect to the levels of transition that they generally achieve. The solid lines represent the most frequent levels in which each system is situated, while the dotted lines illustrate the less frequent levels reached by these systems.

This diagram approaches agroecological transition as a continuum of transformation, a process to which farmers can gradually contribute to when given adequate technical and economic support, increased knowledge and competence development. Looking at the transition in this way can promote synergies among different approaches—such as conservation agriculture and organic farming—rather than opposing them.

Farmers in transition do not necessarily have to go through each transition level. For example, they do not have to switch from conventional practices to more efficient practices; they can directly transform their production system through substitution or redesign (Lamine and Bellon 2009). Thus, there are many ways to carry out an agroecological transition. In Europe, the most common modes of transition are from conventional to conservation agriculture, and

then to fully deployed agroecology, or from conventional to organic agriculture, and then to fully deployed agroecology.

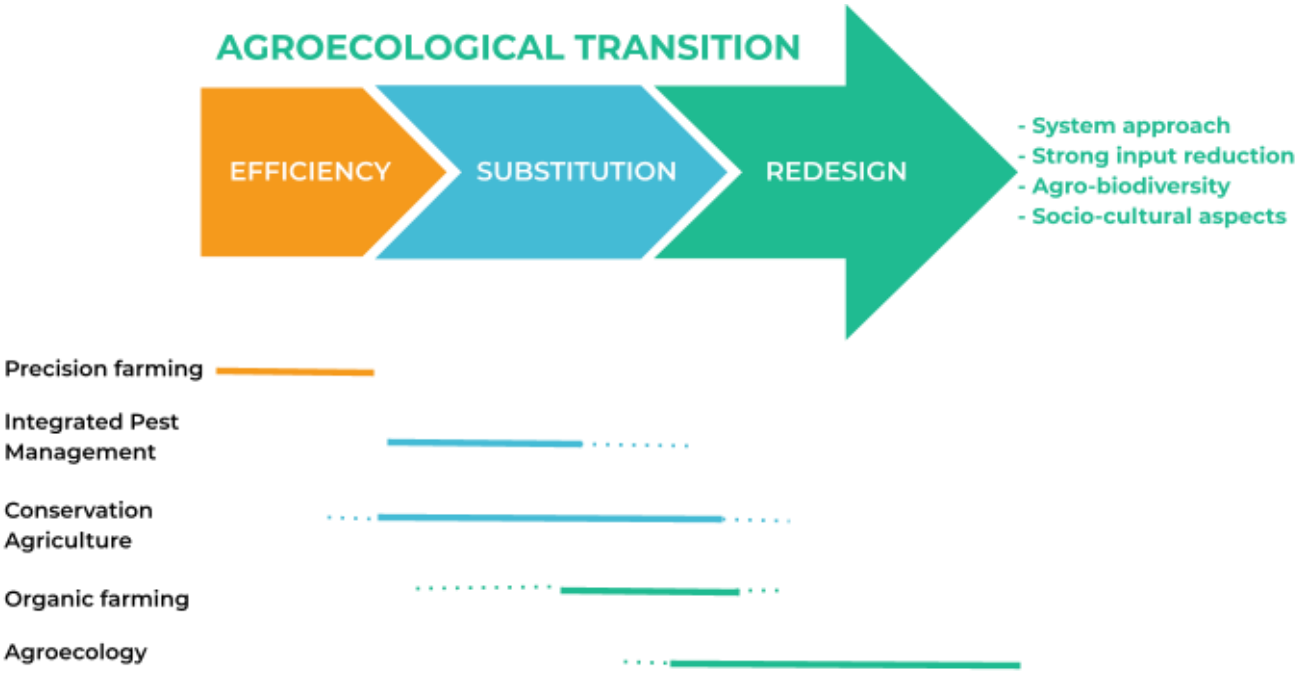

Figure 1. The three stages of agroecological transition.
Source: Adapted from Bàrberi (2021) and based on Hill and MacRae (1995).

This approach shows that agroecology is not just another tool for transforming food systems, it is a *paradigm shift* that is not limited to a set of practices. It constitutes a production system in which different practices and techniques are integrated in a holistic manner.

Figure 2 shows the relationship between agroecology and various other production systems, whose practices it can partially combine.

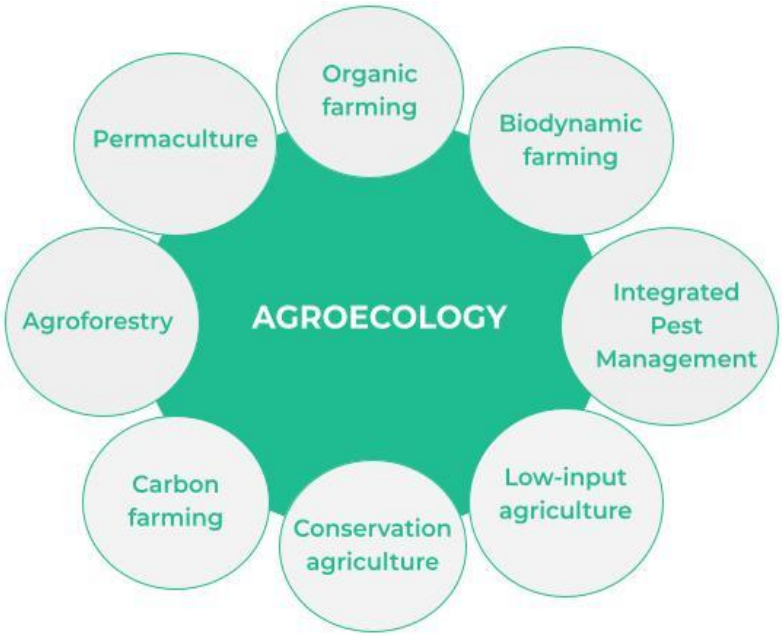

Figure 2. Agroecology and its relationship with other production systems or sets of practices.
Source: adapted from Bàrberi (2019).

Our recommendations

1. *Adopting a systemic approach to accompany the transformation of European agri-food systems*

Table 1 present the list of practices proposed by the Commission that Member States can choose for their Eco-schemes. This list is very interesting and quite exhaustive. Nevertheless, it combines practices and production systems. We propose to separate them for a better understanding.

Among the production systems listed, organic farming, the French system of High Environmental Value farming, conservation agriculture, agroforestry and highly diversified silvo-pastoral systems should all, in our opinion, be subsidized by basic premiums applied at the farm level, as is currently the case for organic farming.

Regarding practices that can be implemented on an individual basis, we propose a reclassification of the practices mentioned according to two criteria:

- Does this practice improve (i) input efficiency, (ii) input substitution or (iii) redesign the production system?
- To which agroecosystem service can this practice be related?

We propose to classify the practices under the prism of the management of services they provide in the agroecosystem:

Agroecosystem service management:

- General management of all types of crops and grasslands
  - Improvement of soil fertility
  - Weed (undesirable plants) management
- General management of all types of crops
  - Crop pest management
  - Crop disease management
- Grassland and livestock management
  - Pasture improvement
  - Improving animal welfare
- Environmental management related to three main challenges
  - Conservation and restoration of general biodiversity
  - Conservation and enhancement of pollinator communities
  - Climate change mitigation and adaptation

These categories make it possible to identify the types of measures that should be combined for a holistic development of the production system.

Table 1 shows the list of measures as proposed by the European Commission (rows in the table). The production systems initially mentioned in the list –Organic farming, High Environmental Value farming, conservation agriculture and agroforestry– have been removed

from the table. The columns of the table represent the agroecosystem service management that we propose. Each measure is then linked to one or more ecosystem service management by a colour code corresponding to the levels of transition: efficiency (E) in orange, substitution (S) in blue and redesign (R) in green. Measures in green can only be attached to the redesign level if several of them are combined in a coherent and holistic way.

Not all practices have the same importance.

Table 1. Classification of the Eco-schemes proposed by the Commission according to the logic of "efficiency – substitution – redesign" (letter and colour code) and the logic of classification of measures in relation to agroecosystem service management (columns)[1]

[1] For simplicity, the following four measures with environmental objectives have not been included in Table 1: (i) measures to reduce and prevent water, air and soil pollution from excess nutrients such as soil sampling if not already obligatory, creation of nutrient traps, (ii) Managing crop water demand and (iii) Feed additives to decrease emissions from enteric fermentation.

	MANAGEMENT OF ALL TYPES OF CROPS AND GRASSLANDS		MANAGEMENT OF ALL TYPES OF CROPS		GRASSLANDS AND LIVESTOCK		ENVIRONMENTAL MANAGEMENT		
	Soil fertility	Weed management	Pest management	Disease management	Grassland management	Animal welfare	Biodiversity conservation and restoration	Pollination conservation and enhancement	Climate mitigation and adaptation
IPM Practices									
Buffer strips with management practices and without pesticide			R				R	R	R
Mechanical weed control		S			S				
Increased use of resilient, pest-resistant crop varieties and species	R	R	R	R					R
Land lying fallow with species composition for biodiversity purpose							R	R	
Agroecological practices									
Crop rotation with leguminous crops	R	R	R	R			R	R	R
Mixed cropping - multi cropping	R	R	R	R			R	R	R
Cover crop between tree rows on permanent crops	R	R	R	R			R	R	R
Winter soil cover and catch crops above conditionality	R	R	R	R			R		R
Low input efficient grass-based livestock system	R	R			R	R	R		R
Mixed species/diverse sward of permanent grassland for biodiversity purpose			R	R	R	R	R	R	R
Improved rice cultivation to decrease methane emissions									E
Husbandry and animal welfare plans									
Providing access to pastures and increasing grazing period for grazing					R	R			
Shepherding on open spaces and between permanent crops, transhumance		R			R	R	R		R
Semi-natural habitat creation and enhancement		R	R	R			R	R	R
Establishment and maintenance of permanent grassland	R				R	R	R	R	R
Extensive use of permanent grassland	R		R		R	R	R	R	R
Animal health prevention and control plans: overall plan for reducing the risk of					R	R			
Practices increasing animal robustness, fertility, longevity and adaptability,					R	R			R
Mixed grazing (minimum 2 species)					R	R			
Improved manure management and storage	R				R				
Carbon farming practices									
Rewetting wetlands/peatlands, paludiculture							R		R
Minimum water table level during winter									R
Appropriate management of residues, i.e. seeding on residues	R						R		R
Nutrients management plan, use of innovative approaches to minimise	E								E
Precision farming									
Precision crop farming to reduce inputs (fertilisers, water, plant protection	E	E	E	E					E
Improving irrigation efficiency	E	E	E	E					E
Managing crop water demand (switching to less water intensive crops,									R
Feed additives to decrease emissions from enteric fermentation									E
Other practices									
Erosion prevention strips and wind breaks	R						R	R	R
Establishment or maintenance of terraces and strip cropping	R	R	R	R			R		
Implementation of nitrates-related measures	E				E				E

Implementing production practices in a stand-alone manner would likely have little effect on improving the overall farming system and environment. In order to avoid this and encourage European producers to integrate several practices in a coherent way and a true redesign of their production systems, we propose to increase the level of subsidies allocated when several practices are combined in a coherent way. The amounts received by farmers who implement several of these practices could be higher than for those who use these practices in isolation. The multiplier (Figure 3) would apply when the farmer chooses to implement several redesign measures (R, green colour in the table) that can potentially provide several agroecosystem services. The incentive to adopt coherent measures would thus be real and would favour a holistic approach that would lead to a transition towards agroecology. An example of the calculation is shown in Figure 3.

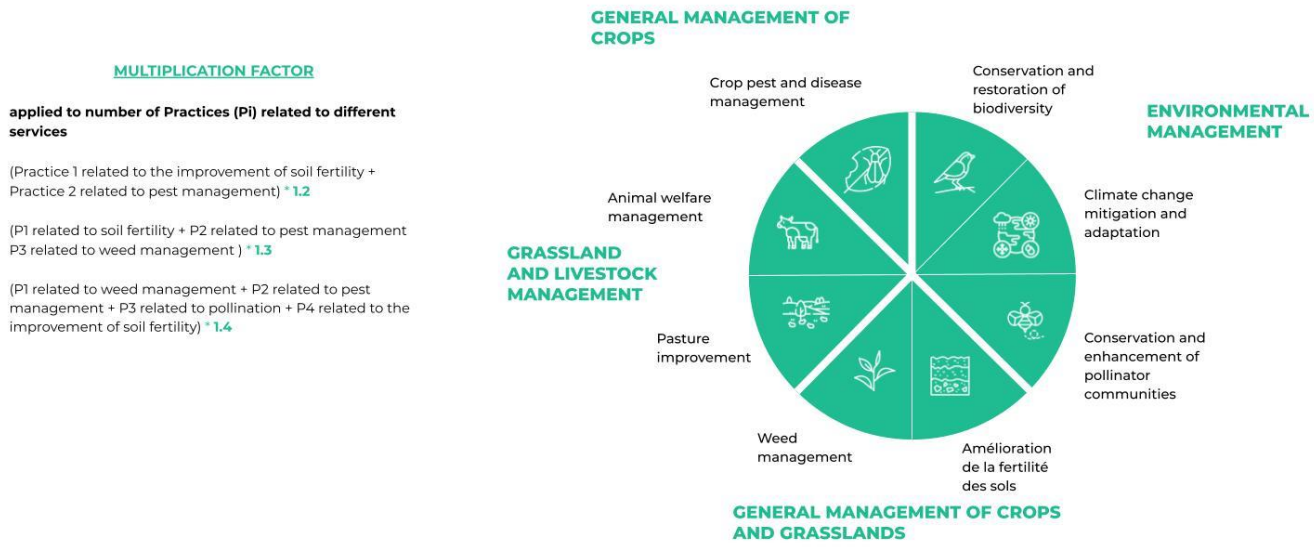

Figure 3: How can we better reward the integration of consistent practices under the Eco-schemes?

2. *Precision agriculture: A limited alternative*

Precision agriculture should not be thought of as an alternative to agroecology. While precision agriculture does allow an efficient use of synthetic inputs and irrigation water, this objective could be easily achieved by simple techniques such as field observation, analysis, or warning services. Precision agriculture increasingly requires the use of advanced technologies (Figure 1) which are costly and may be unprofitable for farmers. They can therefore accelerate the bankruptcy of family farms and marginalize the cultural heritage and traditional know-how associated with them. The significant investment that precision farming can generate for producers can also represent a major obstacle to the transition to sustainable agriculture and food systems. European farms are already subject to overcapitalization, which makes it difficult to transfer them to the next generation. It is not a matter of being against technological progress, but it is important to recognize its limits and the risks that it could prevail on a social level.

This is why we invite the European Commission to not continue to give too much importance to this particular model. Moreover, good input management can be considered as a part of cross-compliance and should therefore not be eligible for financial support under the Eco-schemes. At the very least, precision farming practices should be less supported than substitution and redesign practices.

While it is certain that the agricultural sector needs innovations for transformation, this should not be- limited to new technologies. For example, social innovations that invite us to rethink food governance models by rebuilding the link between producers and consumers, can also represent paths of transformation for the future of agri-food systems, and could be the subject of greater support through public policies (Chiffoleau and Prevost, 2012).

3. Linking production practices and socio-economic measures

Although the Eco-schemes are primarily intended to improve agricultural production practices, we believe that it would also be desirable to include socio-economic measures. More than half of European farm owners are over 55 years old, and almost one third are 65 years or older (Eurostat, 2019). This makes generational renewal among the most urgent and important challenges to ensure the sustainability and future of the European agricultural sector. Without a sufficient number of farmers in the countryside, sustainable production practices cannot be sustained and renewed. This is why we propose the introduction of increased support to farmers who engage in farm transfers and install newcomers and young farmers on their land. For example, active farmers who lease some of their land long term with right to renewal; those that sell their land to first generation farmers for market gardening or small livestock farms, or those who create partnerships, cooperatives or other joint business forms. This can include training (young) rural workers from outside their family with the aim of taking over the farm in the future. All these practices should be receiving specific financial support through the Eco-schemes.

In the same way that it seems relevant to combine production practices and social measures, we believe that it would be desirable to associate criteria relating to the processing and marketing of products by producers or groups of producers. This can be done in collaboration, or not, with local artisans if appropriate, in order to move towards a re-territorialisation of food systems. Of course, investments in infrastructure are supported in the second pillar of the CAP, but we suggest supporting producers who USE processing infrastructures through the Eco-schemes.

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