DIVERSify Factsheet no. 10

RESILIENCE AND ECOSYSTEM SERVICES

How can agricultural policy recognise the benefits of plant teams?

ABSTRACT

The European Green Deal sets out a roadmap to transform "the EU's economy for a sustainable future". It paves the way for policy targets laid out in the **EU's Farm to Fork Strategy (2020)** and the **EU Biodiversity Strategy 2030 (2020)**. The move towards 'green growth' is on the agenda of many other countries outside of the EU and influencing agricultural policy therein. For example, within the **UK's Agriculture Act 2020**.

Below, we outline how **intercropping is a cropping system that could contribute towards policy targets** related to three challenges in particular:
1) input reduction (pesticides, herbicides, fertilisers);
2) increasing agro-biodiversity and diversification;
3) climate adaptation and resilience.
Intercropping can also contribute to targets around increased production of home-grown proteins and rural innovation. However, because intercropping is complex and risky, farmers will likely require support to apply it as well as alternative strategies such as rotations, strip cropping and leys. We describe where intercropping may fit in with initial plans for **agricultural payment schemes** such as within the Common Agricultural Policy (CAP) in the EU or Environmental Land Management (ELM) in England.

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CONTEXT

In the context of the **European Green Deal**[1], **Fork to Farm Strategy**[2], and the **UK Agriculture Act 2020**[3], new farmer payment schemes must include options relating to cropping arrangements or management that can **diminish the use of synthetic N fertiliser, minimise pesticide and herbicide use, as well as maintaining more diversified cropping systems**. Yield increases will have to be obtained with minimum environmental impacts, **preserving agro-biodiversity**, whilst maintaining, or **improving soils**. Intercropping, or plant teams, for grain or forage production have been studied and developed in DIVERSify as a big step forward to provide the evidence-base needed to understand the potential benefits of this cropping system and how it can be applied.

DIVERSify's tests and trials of intercropping indicate that it is an environmentally sound and productive practice with the potential to contribute to **input reduction, reducing biodiversity losses, climate change resilience, increased production of home-grown proteins and rural innovation**. Intercropping trials were undertaken not only by research centres and universities but also by 'Participatory Farmers' that represented **organic and conventional production systems** from a very wide range of pedo-climatic zones. Forty farmers from Denmark, the UK, Austria, Switzerland, Portugal, Spain, and Italy tested crop and forage plant teams to suit their economic and field performance objectives. Differences among their on-farm experiences gave a wide picture of the **socio-economic considerations** and of the bottlenecks encountered in the adoption of plant teams[4].

Fig. 1 DIVERSify project partners consulted and ran trials in collaboration with agricultural stakeholders to understand the broader challenges and opportunities around growing plant teams

PLANT TEAMS AND AGRICULTURAL POLICY

Intercropping and other crop diversification practices should be considered as **options that enable farmers to address the issues highlighted in the European Green Deal**[1]. Establishing intercropping systems on a large scale, as well as alternatives, will likely require **specific support as part of wider schemes**. The farmers that were involved in DIVERSify are already considering that intercropping can be a way towards more resilient cropping systems in terms of productivity and increased agro-biodiversity results, but also for their farm business. By their own initiative they carried out on-farm trials of intercropping to establish the best plant teams for grain or forage production on their farm, at the same time as addressing issues relating to environmental sustainability and the delivery of public goods.

Fig. 2 Diverse agro-ecosystems, such as the Spanish and Portuguese Dehasa, can deliver multiple ecosystem services or 'public goods'

CAP, ELM AND PAYMENTS TO FARMERS

Payments to farmers for adopting intercropping should be recognised within the new Common Agricultural Policy[5] through eco-schemes or through environmental and climatic measures. **Selecting what reward structure best fits the implementation of intercropping is a crucial step.** Eco-schemes are annual payments from Pillar 1 and do not require a contract, only 'genuine' (i.e., able to provide certain - yet to be defined - documentation) farmers can receive them and it is established at a National level. Agro-environmental and climatic measures are multi-annual payments linked to five-year contracts (Pillar 2). Any farmer can obtain them, and they are designed by the Regional Administration. In the UK, we envisage that a similar approach could be adopted to support intercropping within ELM and equivalent devolved schemes; with the **potential for the practice to be recognised as a rewardable action** within the Sustainable Farming Incentive. It could also be a component of a wider landscape level response that can deliver results for Local Nature Recovery or Landscape Recovery.

The multiplicative effect of **on-farm trials** will speed up adoption of more diversified cropping systems. Working with farmers, farmer associations and labour unions, together with the CAP or the ELM policy officials, could incentivise the ecological benefits of mixed cropping by trialling it as a wider eco-scheme or agro-environmental measure. Farmers could (in the case of Pillar 1) or should (in the case of Pillar 2) benefit from a **financial compensation for any reduced profit or income foregone** while in search of their best crop mixtures and generating an ecological benefit at the same time. An important requirement is easy **monitoring schemes** for the national authorities; connection with extension services should be explored. Innovative delivery mechanisms, including **support for ad hoc machinery** or other investment, should also be considered.

Fig. 3 New payment schemes should consider how they can enable the uptake of plant team use via providing financial support in relation to technical barriers to plant team use

CONCLUSION

Intercropping is one of the cropping systems that could respond to policy targets, particularly relating to three areas: input reduction (pesticides, herbicides, fertilisers), increasing agro-biodiversity and diversification, climate adaptation and resilience. Indirectly, opportunities for home-grown protein production and rural innovation have also been observed throughout the course of the DIVERSify project.

A close interaction between farmers and farmers' associations and EU/UK regional representatives will be necessary to foster the spread of intercropping systems. On-farm trials will encourage adoption and spread and should be supported. In the EU plant teams could obtain support as a new eco-scheme or as an environmental measure, but the inclusion and choice of support relies on the Member States. In the UK, equivalent initiatives should be explored.

Pathways to obtain support should be considered and will depend on in-country initiatives. In the new CAP, eco-schemes are being established at a National level and will not require a contract. Environmental and climatic measures are multi-annual payments designed by the Regional Administration linked to five-year contracts. This option should allow farmers to include intercropping in their rotations.

REFERENCES

1. COM (2019) Communication from the Commission: The European Green Deal. 640 final.
2. EC (2020) Farm to Fork Strategy. For a fair, healthy and sustainable food system.
3. Finlay J. *et al.* (2020) Research Briefing: The Agriculture Act 2020.
4. Sears, R.R. *et al.* (2021). D1.2 - Report on socio-economic factors affecting farmer adoption of plant teams. Developed by the EU-H2020 project DIVERSify
5. EC (2021) Common agricultural policy.

FURTHER INFO

> Read the full 'Policy guide on plant teams for intercropping'
> Watch 'DIVERSify's Recommendations' - episode 4 of the DIVERSify web series Growing Beyond Monoculture, which is available in three parts relating to: 1) The overall recommendations 2) How these can be financed and supported by policy 3) The role of knowledge exchange in developing the potential of plant teams further.
> Read on to find out more about Practical Experiences and Innovation: DIVERSify Factsheet no. 11

The project has received funding from the European Union's Horizon 2020 research and innovation programme under agreement No. 727284.