What are sustainable cover crops and why do they matter?

In a world with both increasing renewable energy mandates and constrained feedstocks, sustainable cover crops constitute a valuable source of RED compliant feedstock and can play an integral role in helping to ensure that the EU’s ambitious renewable content targets in transport will be met.

A cover crop is a crop grown primarily for the purpose of protecting or improving soil health between periods of main crop production. Sustainable cover crops offer an alternative use of food crops, as they are grown between main crop cycles, allowing for additional production of non-food biofuel feedstock without indirect land use change (ILUC).

What do we suggest for Annex IX A?

The Renewable Energy Directive (RED III) establishes a mandatory blending target of at least 4.5% for advanced biofuels - those produced out of feedstocks listed in its Annex IX Part A. In December 2022, the European Commission (EC) proposed to amend Annex IX and introduce intermediate crops in the list of feedstocks but within Part B, with the following definition:

“Intermediate crops, such as catch crops and cover crops that are grown in areas where due to a short vegetation period the production of food and feed crops is limited to one harvest and provided their use does not trigger demand for additional land and provided the soil organic matter content is maintained.”

We believe that some cover crops that i) use advanced agricultural technologies, and ii) are not traditionally food and feed commodities should be included in Annex IX Part A. This would not include wheat, corn, rapeseed and soy.

We believe the concept of “advanced technologies” includes novel carbon farming practices, such as off-season cover cropping. The innovation in this case is in providing biomass via the demonstrably sustainable incremental use of existing arable land as well as demonstrably sustainable farming practices. Innovation in the agricultural supply chain has already been recognized via the inclusion of other candidate feedstocks, like those cultivated on degraded land in Part A.

In addition, we understand that there are perceived concerns around the risk of fraud and potential market distortions, particularly for commodity crops competing in the food/feed market which may be diverted to energy. We understand this is a reason why cover crops are currently proposed to be included in Part B, capped at EU and Member State level. Cover crops that are traditionally food and feed commodities, such as wheat, corn, rapeseed and soy, should be included in Part B.

Therefore, we propose that the proposed treatment of cover crops be split into two categories – Annex A for niche and primarily soil improving crops and Annex B for traditionally food commodities. In both cases, the current proposed definition of cover crops would be maintained, and the wording would be the same as proposed by the consortium which helped the EC in the Annex IX revision process. In this way, listing certain cover crops in Part A could spur the investment needed to achieve the advanced biofuels targets designed in the RED III without unnecessarily limiting their potential by downgrading to food commodities.

A. “Intermediate and cover crops, that are niche or primarily soil-improving cover crops, that are not traditionally food and feed commodities and that are grown in areas where due to a short vegetation period the production of food and feed crops is limited to one harvest and

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1 Economic operators can typically buy and sell commodities directly in the spot/cash market or via derivatives such as futures and options.
provided their use does not trigger demand for additional land and provided the soil organic matter content is maintained.”

B. “Intermediate and cover crops, that are commodity crops and that are grown in areas where due to a short vegetation period the production of food and feed crops is limited to one harvest and provided their use does not trigger demand for additional land and provided the soil organic matter content is maintained. This would include wheat, corn, rapeseed and soy.”

We propose adding category A to Part A of Annex IX and category B to Part B of Annex IX.

What is the potential for sustainable cover crops in Europe?

Estimates suggest that domestically grown sustainable cover crops could meet ~2.2 % of total transport sector energy demand in 2030 without using additional land. If they are cultivated in rotations on 10% of EU27+UK arable land, they could potentially produce more than 6 Mtpe\(^2\) of oil feedstock and meet all proposed RED III advanced biofuel sub-target volume in 2030.

**Cover Crops Potential**

**Summary**

- Cover cropping is a new method in Europe, so there is a significant potential to further expand it
- Cover crops can offer significant benefits such as soil fertility improvement and mitigation of soil erosion
- There is a range of cover crops that can be used such as oilseeds like rapeseed and canola
- Considering the cover crops use for competing destinations (animal feed deducted from the current potential) and in line with ICC methodology (Hulshof, ICC (2018) and O Malley, ICC (2021)), it has been approximated that:
  1. The current fuel potential from cover crops - 2 Mtpe
  2. Based on the recent historical data on the change rate of cover crops area, the fuel potential from cover crops is estimated at ~1 Mtpe by 2050. This is a conservative scenario as no ramp-up of cover crops cultivation is included.

**bp activities with regards to sustainable cover crops**

bp has entered into a global agreement with Nuseed to market Nuseed Carinata Oil, an oil produced from the Nuseed Carinata plant grown using demonstrably sustainable farming practices.

bp plans to process Nuseed Carinata oil in its own biofuel production assets and to market Nuseed Carinata oil to other renewable fuel producers with the aim of growing the deployment of products made from Nuseed Carinata oil to help decarbonise transport fuels.

Carinata is a non-‘food and feed crop’ as defined in the RED. The Carinata plant is non-edible for humans due to high levels of erucic acid. However, Carinata meal produced after processing to remove oil is a traceable non-GMO protein source for livestock fodder. Nuseed Carinata cultivation occurs between main crop cycles, therefore providing a secondary additive protein source while not triggering additional land demand nor market distortions. bp is also investigating the potential of other potentially sustainable cover crops, such as pennycress, and Camelina that can demonstrate the sustainable incremental use of existing arable land.

\(^2\) bp calculation and CONCAWE calculation