

CIWM is the professional body for the resource and waste management sector. It represents around 5,500 waste and resource management professionals, predominantly in the UK but also overseas. CIWM sets the professional standards for individuals working in the sector and has various grades of membership determined by education, qualification and experience.

Health and Harmony: the future for food, farming and the environment in a Green Brexit

CIWM welcomes the opportunity to respond to this important consultation and has sought comment from its members through CIWM's Biological Treatment Special Interest Group (SIG), whose feedback has helped form this response.

CIWM would like to make some general comments and these have been followed by our response to the selection of questions relating to resource management and how this can assist with soil health and sustainability.

General Comments

CIWM would like to suggest that there needs to be some overarching principles included in the new Agricultural Policy.

- A more self-sufficient approach to food and food production and this should manage consumer requirements or have exchange arrangements with those countries more able to grow specific produce
- Improved wildlife habitats by increasing connectivity and not just set-aside
- Set-aside policies that encourage biodiversity and wildlife habitats
- Reconnection, by residents of England, with the land and our appreciation of our dependence on it for food and leisure, by education and information.

There are challenges:

- Increasing organic content of soils as a matter of urgency (see specific responses below)
- Management of invasive weeds
- Reducing reliance of chemical inputs to agriculture.

There are also opportunities:



- Vertical growing to be used for food supplies within urban areas
- Increased connectivity between agriculture and the biotechnology of plant biochemicals (see specific response below)
- Better management of coppiced woodland, roadside verges, marginal land, etc for biomass crops alongside enhanced wildlife potential.

Agricultural technology and research

What are the priority research topics that industry and government should focus on to drive improvements in productivity and resource efficiency? Please rank your top three options by order of importance: a) Plant and animal breeding and genetics b) Crop and livestock health and animal welfare c) Data driven smart and precision agriculture d) Managing resources sustainably, including agro-chemicals e) Improving environmental performance, including soil health f) Safety and trust in the supply chain g) Other (please specify)

d) Managing resources sustainably and e) Improving environmental performance, including soil health are key research topics that CIWM suggests should be a priority. Although there has been research in the past looking at how biomaterial (compost, digestate and sewage sludge) enhances soil quality and structure, there are always new areas to consider.

In 2016 [DC Agri](#) (Digest and Compost in Agriculture) project ran field experiments to provide evidence supporting the use of quality compost and digestate as a renewable fertiliser.

The use of compost can improve structure, soil organic carbon (SOC) content more quickly than other organic materials. Along with digestate and sewage sludge biomaterials add micro-nutrients which all adds to the reduction in the requirement for inorganic fertilisers. Nutrients are provided as and when plants require them, feeds microbial life in the root zone and can improve resistance to diseases.

Increased soil carbon matter aids resistance to erosion, water retention – all aspects that help improve yields along with continued soil health.

There is research showing that 10 million Ha of agricultural land is lost through soil erosion (Pimentell, D. & Burgess, M. (2013) Soil Erosion threatens Food Production. *Agriculture* **3**, 443-463). In the East Anglian Fens 380,000 tonnes of soil carbon is lost every year (Soil Association 2016), this is one of the largest areas of food production for England.

CIWM is aware from a recent HVCfP (High Value Chemicals from Plants) workshop that there is work looking at reducing the water content of digestate



to consider using the concentrated liquor. The more solid material left is easier to handle and likely to benefit soil health in a similar way to compost – research would be needed to confirm the exact benefits. More research would also be needed to determine any potential health benefit/impact on plants/crops and soil in using the concentrated liquor like a liquid fertilizer.

Environmental enhancement and protection

Which of the environmental outcomes listed below do you consider to be the most important public goods that government should support? Please rank your top three options by order of importance: a) Improved soil health b) Improved water quality c) Better air quality d) Increased biodiversity e) Climate change mitigation f) Enhanced beauty, heritage and engagement with the natural environment

a) Improved soil health is one of the main important public goods that CIWM suggests the Govt support. This links to b) Improved water quality and ultimately to d) Increased biodiversity.

The use of compost as already mentioned above improves soil health in numerous ways and this in turn improves water quality – there is less reliance on water soluble chemical fertilizers therefore leading to reduced eutrophication of groundwater and rivers. Such benefits enrich biodiversity of life in soils which in turn enhance biodiversity and health of those that feed on such soil life.

Enhancing our environment

From the list below, please select which outcomes would be best achieved by incentivising action across a number of farms or other land parcels in a future environmental land management system: a) Recreation b) Water quality c) Flood mitigation d) Habitat restoration e) Species recovery f) Soil quality g) Cultural heritage h) Carbon sequestration and greenhouse gas reduction i) Air quality j) Woodlands and forestry k) Other (please specify)

CIWM is disappointed to see that under this chapter there is no mention of using compost/digestate/sewage sludge to enhance the environment.

An environmental land management system must have outcomes for f) Soil quality, h) Carbon sequestration and greenhouse gas reduction, c) Flood mitigation as well as b) Water quality. All of these can be achieved by utilising biomaterial to land and CIWM suggests that within the new Agricultural Policy there is mention made of the Bioeconomy Strategy being developed by BEIS.



Whatever incentivisation there is needs to be balanced – the current incentives for AD have pushed out the use of structural biomaterials (compost) to soil – there needs to be a balanced understanding of the benefits of all biomaterials to soil.

“...humus content in compost is recognised as providing a stable form of carbon that can increase soil organic matter and contribute towards carbon sequestration.” (ISWA 2014 Circular Economy: Carbon, Nutrients and Soil).

“Digestate contains more available nitrogen than most organic materials...” so combined with compost they both deliver aspects that enhance the health and structure of soil and crops.

How can an approach to a new environmental land management system be developed that balances national and local priorities for environmental outcomes?

There needs to be a sustainability balance between Nitrogen limitation, to protect water resources versus Carbon maximisation to improve soil quality and sequestration. Is this a good time to perhaps reconsider Nitrogen limits being based on Total Nitrogen value?

