

Executive Summary

Introduction

Proposal This document forms a proposal for funding under the Agricultural Waste Plastic (AWP) Programme by Valpak and Sustain, to carry out a series of life cycle assessments on the collection and recycling of agricultural waste plastic.

Background Life cycle assessment and life cycle thinking is becoming increasingly important in the decision making process for environmental assessment of recycling options. LCA takes a holistic approach to recycling to assess the overall environmental impact of the production use, collection and reprocessing of a recycling system.

Only one study, which was commissioned by the Welsh Development Agency on behalf of a collection company, has undertaken a life cycle assessment of the collection and reprocessing of farm plastics. This work was undertaken by Cardiff University and the work is now over 5 years old. The work was also specific to one type of collection operation.

The Research

Purpose & Justification The purpose of this research project is to review the work undertaken by Cardiff University and update/expand on it, so that it can be used in a more generic basis for the collection and recycling of Farm Plastics. The study will look at various collection models and the environmental impact of different hypothetical recycling targets. The outputs will then be able to inform target setting as to where the equilibrium is between environmental benefit and cost to the producer.

Objectives

- To identify current LCAs or other types of Environmental Impact Assessments that have been carried out in relation to collection and recovery of AWP
- To carry out Life Cycle Assessments on three methods of AWP Collection, including establishing impacts such as:
 - Energy consumption
 - Emissions output – CO₂ , NO_x , SO_x etc
 - Global Warming Potential (GWP)
 - Ozone depletion
 - Acidification
 - Ecotoxicity
- To establish the equilibrium between environmental benefit and cost to the producer of funding PR, for a variety of levels of collection (hypothetical targets)

Methodology, Deliverables & Options

Phase 1

- Desktop research on published environmental assessments and life cycle analyses of farm collection schemes
 - Collate research findings and update the economic model
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Phase 2

- Define 3 collection modes to be assessed:
 - Collection from farm
 - Collection from mini-hub
 - Collection from hub

These 3 modes of collection seem at present likely to be the most effective ways of collecting AWP. They were identified in the research phase of the Programme and the latter two are being trialled for data collection purposes.

- Undertaken life cycle assessment of the 3 modes
 - Develop optimum collection mode for greatest environmental benefit
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Phase 3

- Undertake an assessment of the environmental impact of the rising recycling targets
 - Assess the optimum target for environmental benefit versus producer responsibility costs
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Deliverables

The following outputs will be delivered from the project:

- Review and update of the work undertaken by Cardiff University
 - Generic life cycle analysis assessment for the 3 scenarios of collection modes
 - Environmental impact for a variety of targets
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