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WASTE2FUNC

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Deliverable 7.1

Report of primary stakeholder focus group workshop

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Contents

1	GENERAL INFORMATION PRIMARY STAKEHOLDER FOCUS GROUP WORKSHOP	5
2	GENERAL INTRODUCTION TO THE WASTE2FUNC PROJECT	5
3	DEVELOPMENT OF REGISTRATION AND COLLECTION SYSTEM	5
3.1	FEASIBILITY OF SYSTEM FOR DIFFERENT CROPS	5
3.2	FUNCTIONALITIES REGISTRATION SYSTEM.....	8
3.3	GENERAL INFORMATION ABOUT AGRICULTURAL WASTE STREAMS	9

1 General information primary stakeholder focus group workshop

Date: 27/10/2021

Present: Lien Tyvaert, Karlien Van den Broeck, Leander Hex, Nele Loenders

Excused: Joris Dewinter, Ignace Deroo, Pieter Van Oost

Goal of 1st primary stakeholder focus group workshop:

The purpose of this first meeting is to collect information about the following topics: practical and economic feasibility of collecting agricultural waste streams, registration system and related functionalities of the app and website. Since it concerns general input that is needed from the agriculture and horticulture sector, it was decided to invite only technical consultants from Boerenbond to the first workshop. In subsequent, more concrete workshops (e.g. testing the app), farmers and horticulturalists will also be invited.

Agenda items:

- General introduction to the Waste2Func project
- Development of registration and collection system
 - Feasibility of system for different crops
 - Functionalities registration system
 - General information about agricultural waste streams

2 General introduction to the Waste2Func project

A general introduction to the Waste2Func project was given:

- BBI JU program, duration of the project, project partners
- goal and overview of the project
- general information about the work packages

3 Development of registration and collection system

The development of the registration and collection system was explained and related questions were asked.

3.1 Feasibility of system for different crops

Questions

- For whom might this system be of interest? Who would start working with it?
Taking into account:
 - practical feasibility in terms of harvesting techniques (For which crops are adjustments to equipment needed or not needed in order to collect by-products easily?)
 - easily transportable waste streams (Which by-products are already collected?)
 - available quantities of waste streams (From which crops are substantial amounts of by-products available, e.g. chicory roots, leeks, pears, cauliflower?)
- For which specific crops could this system be interesting on a farm-level? For which crops would it be more interesting to work at the level of the auctions?
- What would this have to yield for farmers per kilo or tonne to be worth collecting?

Answers

For **greenhouse horticulture** (mainly **tomatoes** and **cucumbers**, but also **peppers and eggplants** in smaller quantities), the most logical option is to work together with the auctions. Because at company level, this concerns relatively small waste streams that spoil very quickly. Greenhouse horticulture waste streams are created at two different locations and times. One of the waste streams is created at the auctions. From time to time lots are not sold at the auctions. In the first instance, efforts are made to ensure that these lots end up at food banks or companies that prevent food waste (e.g. EnVie soups). But sometimes there are lots of unsold vegetables (and fruit) left over, these lots can be an opportunity for the Waste2Func project. Another moment when by-products are created is the sorting out at the greenhouse companies themselves. Tomatoes, cucumbers, peppers and eggplants that cannot be sold anyway are selected and composted. This flow of "class 3" vegetables is not very large per company and it concerns biomass that spoils quickly, which makes it logistically difficult to collect this flow. An option is proposed whereby these "class 3 products" are transported to the auctions as well. Since class 1 and 2 products are transported anyway, this transport does not need to be specially arranged. In this way, "class 3 products" are collected at the auctions and can more easily be transported from there for further processing (e.g. Waste2Func). This option requires a change in the operation of various actors (greenhouse growers and auctions), plus has consequences such as extra weight to be transported and payment for these transport costs. Therefore, it will probably not be possible to apply this in the short term, but hopefully it will become a possibility in the long term to valorise as much biomass as possible to a higher level.

For **soft fruits (strawberries, raspberries and other berries)** the most logical option is also to work together with the auctions. But soft fruits spoil even faster than greenhouse vegetables, making it logistically very difficult to collect this waste stream. If unsold lots at the auctions can be collected, this is a possibility for the Waste2Func project. But it is important to know that it will not always be possible to collect this waste flow in time.

Hard fruits (apples and pears) are not always sold through auctions; there are many large companies that arrange their own sales. The harvest of apples and pears is also very concentrated in time, which makes it logistically feasible to collect by-products from the bigger farms. For this sector, a combination of cooperation at farm level and at auction level is therefore optimal. It is mentioned that pears and apples with small damages (class 2 fruit) already largely go to processing companies, for the production of juice, compote, etc. Both auctions and individual companies often have a partnership with processing companies. Thus, a large part of the waste streams from this sector is already valorised and for the Waste2Func project we'll have to look for waste streams that aren't valorised in a processing step.

Waste flows from **leek** cultivation also offer an opportunity. During the harvest of leeks, leeks that cannot be sold are collected on a cart. These leeks are then composted or returned to the field. Since the leeks are already collected and do not immediately perish, this flow is relatively easy to transport from the larger companies if a sufficiently large waste stream is produced. Again there can also be cooperation with the auctions for unsold lots without destination.

With **chicory or Belgian endive** cultivation, a large waste stream (e.g. leaves, roots, etc.) is created, making this sector potentially interesting as well. The consultants present have no expertise in relation to this type of cultivation and cannot provide any input. The consultants who do work on chicory cultivation will be contacted.

In the cultivation of **other vegetables** (e.g. Brussels sprouts, cauliflowers, peas and beans), by-products are not collected directly during harvesting. This means that there are two options. Either new harvesting techniques with accompanying machines must be applied; knowledge institutions such as Inagro and ILVO

are working on projects with demonstration trials for this purpose. Or the field must be driven over a second time to collect the biomass; the consultants present do not consider this option realistic. This is time-consuming, but more importantly has a negative impact on the soil structure. Also, this biomass is currently causing carbon enrichment of the soil, so removing this biomass also has an impact on soil quality. The consultants advocate keeping the biomass, that ends up directly on the field, there. Nevertheless there can be cooperation with the auctions for unsold lots without destination.

Potato cultivation can also offer another opportunity for the Waste2Func project. During the harvest, partial sorting already takes place, with the rejected potatoes ending up on the field. The harvested potatoes are collected for storage at the company itself. When the potatoes taken out of storage, a second sorting takes place, releasing a large residual flow. At the moment, part of this residual flow goes to cattle feed, but it could also be collected at company level for the Waste2Func project.

A final opportunity are plots with a **crop failure**. These are complete plots whose harvest has been rejected. In most cases, the farmer leaves the entire harvest on the field since harvesting costs money and nothing can be done with the harvest itself. The harvest that is left on the field can cause problems in the following season. If the farmer were to be compensated for the harvesting costs and a surplus, the harvest could be done. This means there is a harvest of a number of hectares at a specific location, which also makes it logistically easy to collect this waste flow.

The consultants also gave 2 general **remarks**. First of all, to contact FVPHouse, which is the umbrella organisation of the professional federations of the Belgian potato, fruit and vegetable wholesale and processing industry (Belgapom, VEGEBE and Freshtrade). Since Belgapom (professional association of potato processors and traders) and VEGEBE (professional association of industrial vegetables) also generate a lot of biomass side streams, this could be an opportunity for Waste2Func. Secondly, they suggest making sufficient links with other ongoing and past projects. The consultants have been contacted in the past by other projects with similar collection system ideas. They have the impression that these systems are created in different projects but little is done with them after the projects are finished. Specifically, one of the consultants was recently contacted by the RUSTICA project. The aim of this project is to research and develop technical solutions to convert organic waste flows from the fruit and vegetable sector into new high-quality bio-based fertilisers. One of the steps in this project is therefore the collection of organic waste flows from the fruit and vegetable sector. Some of the project partners of this project are UGent, KUL, ILVO and Avecom, so it is certainly possible to contact them.

We can conclude that the following issues offer **opportunities for the Waste2Func project**: cooperation with the auctions for unsold lots of vegetables and fruit, cooperation at farm level is possible for the cultivation of apples, pears, leeks, potatoes (and possibly chicory) and cooperation at farm level when there are parcels with crop failures. Agricultural accounting consultants are contacted for the related financial figures.

3.2 Functionalities registration system

Questions

- If we provide the **user management** (via app and website) as follows, is this sufficient or would you change anything?
Initial registration of farmers/companies on the collection service with following data:
 - Name
 - Pick-up address (can be different pick-up addresses, max 3)
 - Mail address as login
 - Phone number
 - User roles : ADMIN, RETRIEVER, USER
- Should there also be a possibility to register by phone?
- If we provide the **waste registration** as follows, is this sufficient or would you change anything?
 - Registration of waste via 3 possible “channels”: website, app, via telephone with a selection menu
 - Status: REQUESTED – COLLECTED – NOT COLLECTED – DELETED
 - Specifications to indicate:
 - Weight
 - Waste type: vegetables, fruit, potatoes (dropdown menu)
 - Degree of pollution: stones, sand, other crops, wet or dry (dropdown menu)
 - Collection time (= range of days): 2 days if quickly expired/mouldy/go bad, otherwise 1 week
 - Location: Selection of 1 pick-up address from the list of pick-up addresses of that user
 - Photo: Possibility to upload a photo of the waste
 - Collector: Selection of 1 collection address from the list of collectors
 - User can view list of his previous waste registrations. User can change status and data of his own waste registrations.

Answers

The consultants believe that all necessary functionalities for user management and waste registration are included. However, the consultants remark that the security of the app should be taken into account, as the waste data of the farmers is a sensitive matter and should be protected.

When asked whether telephone registration should be an option or not, the consultants ask what the purpose of the system is. Farmers generally are more likely to make phone calls than to consult a website or app. If the purpose of the app is only to collect waste streams on a relatively small project scale, the consultants wonder why the development of an app is necessary and why this information cannot simply be passed on quickly by telephone. It is added that the app can provide name recognition for project communication. It is also suggested that passing on information by telephone remains possible up to a certain scale, but on a larger scale an app would obviously make data processing easier. The consultants conclude that if there is cooperation with the auctions and large agricultural companies and the registration options are given via an app, website or telephone with a drop-down menu, the app or website will probably be the main choice. The telephone option does not seem necessary to them.

The remark is made that there is already a proliferation of apps for farmers. The large number of different apps is becoming cumbersome and inefficient for some farmers. The auctions have been working on a solution for this: Care4Growing. This app arose from a collaboration between BelOrta, REO Veiling and Coöperatie Hoogstraten, the largest fruit and vegetable cooperatives in Belgium. Care4Growing is intended to be the virtual assistant of the smart grower. It is a digital platform where the grower is central, but

suppliers and many other partners in the sector can plug in to work together. In this way, the app works from cultivation to supply. One consultant suggests that a collaboration with Care4Growing could be interesting for the Waste2Func project, because then all the information would be together in one app for the growers of fruit and vegetables. It is important to note, however, that this app is still in the start-up phase and currently only groups cultivation information and product information. Setting up a collaboration with this app for the addition of waste flows will therefore only be possible in the long term.

In potato cultivation, crop registration takes place via a great many different apps and this is not likely to change in the near future. Also, the largest residual flows here are only released a long time after harvest, so there are almost no links to a cultivation app. In this sector a separate waste registration app therefore seems a more logical option.

3.3 General information about agricultural waste streams

Finally, in consultation with project partner NNFCC, some general questions were asked about agricultural waste streams.

Questions

- What are the most financially or practically valuable wastes to farmers? Which waste streams do farmers want to keep for their own use?
- What are the most problematic wastes/residues to dispose of? Which waste streams are difficult to get rid of or no one wants or has a use for?
- What are the most challenging issues/greatest barriers to disposing of waste?

Answers

The most **valuable waste streams** for farmers are those they can sell to food processing companies or to livestock farmers (as animal feed). In this way, the side streams are valorised, but the farmer also earns something from them.

The most **problematic waste streams** for farmers include mixed waste streams, for example waste streams from greenhouse cultivation where biomass is contaminated with plastic and nylon. Persistent weeds are also a waste stream that is difficult to remove. For example thorn apple or jimsonweed, a persistent and toxic weed found in potato fields. Manual removal of thorn apple from the field is advised, but farmers are then faced with the question of what to do with the biomass. As the seeds of thorn apple also continue to ripen after removal, the removed biomass causes further problems. Another problematic waste stream are the FAVV (Federal Agency for the Safety of the Food Chain) blocked products, it is difficult and costly for farmers to get rid of them. The occurrence of plant diseases also entails difficult waste flows. For example, when fire blight occurs in fruit cultivation, one must act quickly by pruning the infected plants or parts of the plant. The pruned material can then only be processed through incineration.

The **biggest obstacles for waste disposal** are related to problematic waste streams. Mixed waste streams cause problems, as this waste has to be separated or it is not processed optimally. Waste legislation also creates barriers, for example there are very strict rules on farm composting so many farmers do not choose this option. Another obstacle is the large water fraction in fruit and vegetables, which causes high transport costs when transporting waste streams. These high costs may hinder the valorisation of waste streams.