



## **D1.3 Inventory Report on Producer Demands to customize new Target Groups along the Supply Chain**

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# Introduction

The Interreg North-West Europe ReNu2Farm project aims at increasing recycling of plant nutrients: Nitrogen (N), Phosphorus (P) and Potassium (K). Despite the existing recovery technologies, the usage of recycling-derived fertilisers (RDFs) is still limited. Following the well-approved methodologies of ReNu2Farm, the Capitalisation (CAP) initiative aims at stimulating new markets for increased Recycling-Derived Fertilizers (RDFs) use and decrease mineral fertilisers usage in North-West Europe. The new target groups are the horticulturists, which represent the largest RDF sales market after agriculture, and the private/recreational sector. This latter, including leisure activities and private households among others, can ensure a multiplication effect in outreaching general audience and to increase public acceptance of Recycling-Derived Fertilizers (RDFs).

The ReNu2Farm CAP aims to activate the RDFs market, by facilitating the matchmaking between the end-users demand and the supply side. The present publication provides an overview of the practical experience from RDFs fertilisers producers, by showcasing 10 success stories from the involved countries: Timac Agro (Netherlands), Twence (Netherlands), Entsorgungsverband Saar EVS (Germany), Landwirtschaftsbetrieb Horst Körner (Germany), Fertilux (Luxembourg), Fertira (Belgium), Anorel (Belgium), DCM (Belgium), Green King Composting (Ireland), Natural World Products (Ireland).

Each success story offers an insight on the company itself, the recovery technologies, the challenges and the possible solutions that might be taken to overcome the existing barriers for the RDFs products in the horticulture and the recreational/private sectors.

Each success story provides a valuable advice that can be intended as a key take-away message to favor the market uptake of Recycling Derived Fertilisers.



# **Timac Agro (The Netherlands)**

## The Company

### History

Timac Agro Nederland BV is part of the Groupe Roullier and is active in animal feed, soil improvement and fertilisers in agriculture.

In the Netherlands, a team of more than 20 product specialists is visiting dairy farmers, arable farmers and horticultural farmers to market their products in combination with advices and recommendations.

### Fertilisers/Products

Timac Agro is producing various types of fertilising products and has grouped them in four categories:

- Calcium containing root hair stimulants
- Starter fertilisers, like Physiostart NP 8-28, Physiostart NK 17-0-5, Physiostart P Plus 6-27 with recovered phosphate
- Biostimulants
- NPK fertilisers with the product name 'Activ'N'.



### Technology

Struvite (magnesium ammonium phosphate ( $\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$ )) that is produced at a wastewater treatment plant (WWTPs) of the Waterboard Vallei & Veluwe in Apeldoorn (the Netherlands), is used as raw material for the product Physiostart P Plus.

For the struvite production in Apeldoorn the NuReSys©-technology is used.

Nutrients Recovery Systems (NuReSys)© is a Belgian company founded in 2011 which supplies in particular controlled struvite crystallisation technology. The technology is not just applicable on digested sludge and post dewatering, but also on combining both.

This results in a struvite product with 1.8% N, 25.5%  $\text{P}_2\text{O}_5$ , 15.1%  $\text{MgO}$  and < 0.5% organic matter.

Struvite is used as a raw material for the production of Physiostart P Plus in a production plant in St Malo in France.

There it is dried by a heating process after which N, S and Zn containing substances are added. Additionally, a root growth stimulant is added to the product.

The product is finely ground at a particle size of 0,5-1 mm.

The final product is called Physiostart P Plus and contains 6%  $\text{NH}_4\text{-N}$  and 27%  $\text{P}_2\text{O}_5$ .

# Timac Agro

*'The horticultural sector is very diverse and requires tailor made fertilisers for each crop type'*

Katinka Koolen, Project Manager,  
Timac Agro

## The Market

The product Physiostart P Plus with recovered phosphate is especially used by dairy farmers in the Netherlands.

On dairy farms it is mainly used as a starter fertiliser in silage maize. It is band applied in small amounts during sowing, to optimize the availability of N and P to the roots of young maize plants.

In addition, it is also used during grassland renovation.

The National legislation in the Netherlands has played an important role for the market introduction of this product. Within that scope, dairy farms with a derogation (they were allowed to apply N in excess of the limit of 170 kg N/ha for animal manure from the EU Nitrate Directive), were not allowed to apply traditional mineral P fertilisers from 2014 onwards.

All P applied on those farms should be recovered P, either from animal manure or other recycled P containing sources.

In the beginning, it was difficult to obtain the allowance from the responsible authorities for the legislation (Ministry of Agriculture in the Netherlands) for the application of the product with recovered P on dairy farms with a derogation.

After the permission has been obtained, the commercialisation has been successful. Dairy farmers were used to traditional NP fertilisers already in the past. This innovative product could be used instead of traditional NP fertilisers, that were not allowed anymore after 2014.

The main target group for Physiostart P Plus (6% NH<sub>4</sub>-N and 27% P<sub>2</sub>O<sub>5</sub>) are dairy farmers in the Netherlands, because of the unique position this mineral fertiliser with recovered P has received within the scope of the legislation.

This was an advantage for Dutch dairy farmers with a derogation only, and it is the reason that the product is almost exclusively used on those farm types in the Netherlands.

## Horticultural sector

Timac Agro is interested in the possibilities to expand the use of this product in other sectors, like horticulture.

For that reason they have done pot and field experiments with vegetable crops, like strawberries.

Until now, Physiostart P plus is hardly used in horticulture, because Timac Agro has focused its marketing activities on dairy farms.

They expect that it will not be easy to expand to the horticultural sector, because the large number of crops with a small acreage requires a sophisticated marketing based on a good knowledge base.

Moreover, quality standards in horticulture are high, because of food safety aspects, etc.

# Timac Agro

*'The uptake of RDFs in certification schemes for sustainability could contribute to a successful market introduction in horticulture and the leisure sector'*

Katinka Koolen, Project Manager, Timac Agro

The horticultural sector is very diverse, because it is partly taking place in greenhouses and partly in the open air. Moreover, cultivated crops vary from vegetables to flowers, bulbs and trees.

Vegetable growers require high quality fertilisers that guarantee a nutrient supply that meets the nutrient demand of the crop and that is safe to use (e.g. within the scope of food safety programs, like HACCP, etc.).

For a successful marketing of new fertilising products based on recovered nutrients in horticulture, tailor made products of high quality are needed.

The products should be differentiated for the various crop types and nutrient supply should meet nutrient demand in different situations.

## Private/leisure sector

Timac Agro sees opportunities for expanding to the leisure market, especially for the fertilisation of sports fields.

Several initiatives with the use of struvite as fertiliser on sports fields have been made in the Netherlands in the past decade.

The responses from the end users were promising.

Until now, Physiostart P plus is hardly used in the private and leisure sector, because Timac Agro has focused its' marketing activities on dairy farms.

Sustainability is an important issue in the leisure market. For that reason fertilisers based on recovered phosphate are potentially very interesting for that sector.

This potential benefit could even become stronger if it could be proven that those products will lead to low nutrient emissions to ground and surface water.

## Supply Chain

Until now, the expansion of the market to horticulture and the private and leisure sector has not received a lot of attention within Timac Agro.

Possibly this will change in future. For a successful market introduction it is crucial that recycling derived fertilisers will get a position in sustainability certificates of the sectors and that the involvement of distributors of fertilisers that are active in those sectors is improved.

## What is your advice?

The uptake of recycling derived fertilisers like Physiostart P Plus, that is based on recovered phosphate, in the horticulture and/or the private and leisure sector will be favoured by :

- a high quality of tailor made products that are safe to use,
- an improved awareness of the importance of nutrient recycling and the uptake of RDFs in certification schemes

# **Twence (The Netherlands)**

## The Company

## History

Twence is in transition from a waste company to a company that produces energy and raw materials. Twence is doing this together with its shareholders, which are 15 municipalities in the eastern part of The Netherlands (Twente & Achterhoek), close to the German border.

In spring 2022 a new production plant for manure valorization has been opened.

The preparations for building the plant has started in 2007 and has taken a lot of effort. Especially, obtaining the environmental permit was difficult and time consuming.

Twence is producing three different types of fertilisers by the valorisation of animal manure:

- 25000 ton organic P fertiliser, with 30% dry matter, 11 kg N, 20 kg P<sub>2</sub>O<sub>5</sub> and 9 kg K<sub>2</sub>O per ton product. The product is hygienised and it is allowed to export it.
- 15000 ton K containing fertiliser, which contains 70 kg K<sub>2</sub>O and 4 kg P<sub>2</sub>O<sub>5</sub> per ton.
- 3000 ton of a concentrated ammonia (NH<sub>3</sub>) solution.

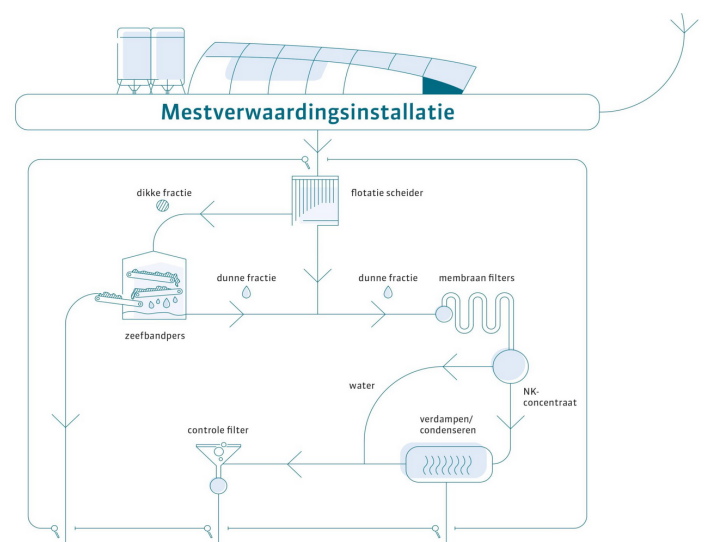
## Technology

The main part (95%) of the raw material exists of pig slurry, which is supplied in an amount of 250000 tons per year.

In addition some other materials are used for the optimization of the digestion process, like glycerine and/or iron water.

The starting process for the manure volarisation is mono digestion of animal manure (pig slurry). The digestion process is modified in such a way, that hygienisation is taking place during the thermophilic digestion process.

After the digestion process, the digestate is separated in a solid and a liquid fraction by a flotation separator, and the solid fraction is further upgraded by a belt press, while the liquid fraction is concentrated by reversed osmosis, followed by stripping and scrubbing of the ammonia from the liquid fraction.



*Process scheme of the installation for manure valorisation of Twence*

## The Market

Twence found markets for their product, but improvements are still possible. The organic P fertiliser is exported to the eastern part of Germany and Poland, where it is used on large arable farms. The K rich product is used on arable farms in the Netherlands. It is especially useful for potatoes.

The concentrated ammonia (NH<sub>3</sub>) solution is partly used as an industrial product and partly as raw material for mineral fertilisers.

Twence is working together with intermediate partners, who deliver their products to the end users. That is important, because Twence doesn't know the market of end users by themselves, while the intermediates do.

In that way, each partner in the production chain is doing his own thing: Twence is producing high quality fertilisers and the intermediate partner is supplying the product to the end users. That works well.

The most relevant barriers Twence is facing in the commercialization of RDFs are as follows:

- They are obliged to export the organic P containing product, which leads to high costs;
- The legislative status of all products is that of animal manure, which limits the sales;
- The high costs for logistics (transport). A shorter distance between the production location and the location where it is used, is desirable.

The most important end users of the current products of Twence are arable farmers in Germany, Poland and the Netherlands. However, their products are sometimes used as a raw material for fertilisers, and in that case fertiliser producers are the target group and not the end users.

## Horticultural sector

It would be interesting to expand into the horticulture sector, because the margins are higher. Twence is exploring that at the moment for their ammonia water, by pilot experiments where it is used as a raw material for fertilisers for the horticultural sector.

In addition, their K containing product could be interesting for horticulture.

The high quality requirements for fertilisers that are used in horticulture appears to be a barrier for a successful implementation at the moment.

Their ammonia water contains carbon dioxide, which is considered as a pollutant in fertilisers.

Twence is expecting that end-users of fertilisers in the horticultural sector require high quality products. The products should contain high nutrient contents with a reliable and stable composition and efficiency. For Twence, it is still a challenge to meet those requirements.



As stated before, Twence is convinced that it is important to improve the quality of their products, until the requirements of the end users in the horticultural sector are met.

That will be a prerequisite before they will successfully expand into this market.

## Private/leisure sector

Twence would like to expand into the private/leisure sector. Their appear to be opportunities for the organic P fertiliser, e.g. by granulation of the product, that has a dry matter content of 30% until now.

If the granulated product could be introduced in the consumer market, it could lower the costs for logistics and transport significantly. That would be interesting.

A barrier to expand into this sector is that Twence doesn't know the consumer market and its' requirement very well. So it is not known which types of fertilisers could be marketed there and how.

The next question will be how Twence can produce such a fertiliser for reasonable costs.

Another barrier could be that the amounts of products on the consumer market are relatively small. So, it will be difficult to market a large volume of a new fertiliser on the consumer market.

Twence is especially interested in the private sector, or the so called consumer market.

To enter this market, Twence will look for an intermediate partner who knows the consumer market very well.

Preferably, Twence is supplying the raw material which is used by a fertiliser producer to make the end product for the consumer market.

## Supply Chain

Twence is producing various products: The organic P fertiliser is exported to arable farms in the eastern part of Germany and Poland; The K rich product is used on arable farms in the Netherlands; The concentrated ammonia (NH<sub>3</sub>) solution is partly used as raw material for mineral fertilisers.

Twence is working together with intermediate partners, who deliver their products to the end users. To enter the horticultural sector and/or consumer market, new supply chains should be developed. The involvement of intermediates is crucial because they know the quality requirements for the fertilisers.

## What is your advice?

A better marketing of recycled fertilisers should be facilitated by the national government and European Commission by taking away unnecessary bottlenecks caused by regulations and legislations



# **Entsorgungsverband Saar EVS (Germany)**

# Entsorgungsverband Saar EVS

*'Agriculture is a very large consumer of fresh compost. However, offtake varies extremely seasonally, making it difficult to maintain a stockpile'*

## The Company

### History

The task of the EVS is the supra-local wastewater treatment and waste management in Saarland. In most municipalities, EVS also organizes the collection and transport of waste to its own or contracted recycling facilities. All details about the tasks and the organization of the EVS are regulated in the EVS law and in the association statutes.

### Technology

The process is composting. This includes the following process steps:

1. Shredding of the delivered green waste by means of shredder
2. Screening by star screen into 3 fractions (0-40 mm, 40-200 mm and greater than 200 m)
3. Intensive rotting (7-10 days) (pressure-ventilated rotting boxes) of the 0-40 fraction
4. Packing or renewed screening
5. Post rotting

They primarily produce quality-assured composts. However, these are to be seen primarily as soil conditioners and only secondarily as fertilizers.

All composts are monitored and certified by the Bundesgütegemeinschaft (BGK) and bear the quality mark compost.

## Market & End User

1. agriculture
2. earthworks
3. landscaping
4. private

Agriculture is a very large consumer of fresh compost. However, offtake varies extremely seasonally, making it difficult to maintain a stockpile. The soil plants almost always pick up finished compost continuously (0-20 mm), which makes it easier to plan.

## End User Expectation

Soil works have the highest demands on the compost and expect a consistent quality (same degree of rotting) and no impurities. Apart from that, there have been almost no complaints from the landscaping industry or from private customers.

# Entsorgungsverband Saar EVS

*'We are in the process of returning even more compost to municipalities to establish composts even more in Germany'*

## End User Acceptance

The establishment of composts is a years-long process and they are still at the beginning. What they are benefitting from at the moment is the sharp rise in the price of conventional fertilizers, which is why many farmers are looking for alternatives of their own accord.

## To which target group would you like to see your product additionally?

Municipalities: They are in the process of returning even more compost to municipalities to establish composts even more in Germany.

## Supply Chain

### Challenges:

The degree of moisture of the delivered green waste varies greatly depending on the season.

### Solution:

In summer, the material is sometimes additionally watered during screening in order to compensate for the lack of moisture, and in winter the screen material remains longer in the intensive rotting process in order to discharge more moisture.



# **Landwirtschaftsbetrieb Horst Körner (Germany)**

# Landwirtschaftsbetrieb Horst Körner

*"We primarily produce dried digestate consisting of over 80% horse manure."*

## The Company

### History

It is a long-established farm with horse management. A biogas plant is connected to the farm for the utilization of horse manure.

The farmer's job consists in the management of the company. This includes the purchase and sale of substrates/fermentation residues of the biogas plant.

### Technology

The process is fermentation. This includes the following procedural steps:

Add manure (not crushed) to the fermenter.

Substrate remains in the fermenter for at least 9 weeks.

During this time, the substrate is reacted 3 times and mixed with new substrate.

Subsequently, the digestate is further dried if necessary.

### Further Information

Since this is a novel plant, many points are still in the experimental stage.

## Product

We primarily produce dried digestate consisting of over 80% horse manure. This is to be used as fertilizer in agriculture as well as in horticulture

### Certification

Currently, the digestate is not yet certified.

## Market & End User

1. Agriculture
2. Horticulture
3. Private

1/3 of the resulting quantities is required for fertilization on your own farm. Most of the digestate goes into agriculture

### End User Expectation

Uniform application of the digestate



# Landwirtschaftsbetrieb

## Horst Körner

*"The composition of horse manure is very heterogeneous."*

### End User Acceptance

The marketing of digestate is only being set up in my area. What benefits us at the moment are the sharp rise in the prices of conventional fertilizers.

### To which target group would you like to see your product additionally?

Agricultural sector, horticulture and municipalities.

### Supply Chain

#### Challenges:

The composition of horse manure is very heterogeneous.

#### Solution:

This is to be compensated by mixing and adding landscape maintenance materials.



# **Fertilux (Luxemburg)**



# Fertilux

*'Certification of regional and organic origin work very well for marketing'*

## The Company

### History

Fertilux SA helps to secure agricultural yields with eco-alternative fertilization that allows plants to optimally assimilate vital nutrients. Our foliar fertilizer supplements and soil amendments are made from unique formulas whose components are of natural plant origin.

Fertilux is a partner of the 4 per 1000 initiative, which has earned the company recognition for its actions aimed at reducing CO2 linked to human activities in the atmosphere.

The company has been active since 2000 and operates in the manufacturing, trading and transport of fertilizer products at the Grevenmacher site in the Grand Duchy of Luxembourg.

It works mainly with raw materials of agro-industrial origin from the biosynthesis of amino acids. The biological resources are provided by microorganisms such as bacteria and fungi.



### Technology

Fertilux SA offers eco-productive and innovative fertilization solutions. They produce mainly mineral fertilisation complements from the mixture of raw materials of agro-industrial origin with added microorganisms. Soil amendments based on components of natural plants are also one of their main products.

Fertilux applies technology of mixing and making powder, granulation and coating with organic material of plant origin. In addition, the technology enabling inoculation of microorganisms is possible.

### The market

Fertilux claims that the demand for their products is increasing and that two aspects worked very well in marketing their products: regional origin of the product and the certification proving the organic origin.





# Fertilux

*In Luxemburg the origin of the product is very important. Products of local origin are experiencing preference.*

## Horticulture sector

Fertilux would not mind expanding into horticultural sector. Especially the municipalities in Luxemburg would be interested, but it would require additional resources in marketing.

The main barrier is the lack experience from user's side. They have worked since decades with conventional fertilisers and have no experience at all with microorganisms. They will need to change their practice and therefore there is certain mistrust towards new practices, especially if it requires a complete change.

Another barrier is the change of the packaging size and distributed quantities.

Finally the consumers in any sector look at the price.

The product has to be affordable and should adapt to their business case. In Luxemburg the origin of the product is very important, too. Products of local origin are experiencing preference.

It is important to organize a workshop series, so that actors from this sector get familiar with the products and how they function as well as the required new techniques.

## Private/Leisure sector

This sector will form a small fraction of customer share, but it could be interesting to expand into this sector, too.

Similarly, to the horticultural sector, the actors are not familiar with necessary techniques and have no experience of using organic fertilisers.

As mentioned before, the price is essential. Then, particularly in this sector application shall be easy to make. Workshop series and marketing campaign with intense information on functioning of our products is required.

## Supply Chain

The product packaging will have to be in small size mainly. It requires additional chain of production. So far Fertilux has not done anything.

## What is your advice?

Fertilux recommends a marketing campaign with intense information load. The potential customers have to get familiar with "new" products and their functioning. Use cases have to be carried out and demonstration pilots. Clear, simple and short explanation of new techniques is of great importance.

# **Anorel (Belgium)**

# Anorel

*'Price remains one of the main important factors'*

Josephine Cafmeyer, strategic manager, Anorel

## The Company

### History

The fertiliser supplier Anorel started 25 years ago with contacts in South Africa.

The idea was born to take the technical knowledge of fertiliser production abroad and to be able to offer these products competitively and at European standards through toll-manufacturing.

They currently trade fertilisers (im- and export) in over 35 countries. All this with 21 employees across two sites in Belgium and one in Africa.

Anorel mainly offers water-soluble straight fertilisers (contributes single and sometimes two nutrients to the crop), complex fertilisers and NPK fertilisers. These products provide the whole range of nutrients (macro, micro and trace elements) the plant needs.



### Technology

The raw materials are still acquired through the mining of salt mines and traditional chemical production.

However, as a more sustainable solution, they also provide fertilisers from processed ashes.

### The market

For their current products, Anorel mainly targets horticulture (BE and NL) and trading (export). The private leisure sector (mainly gardeners) only comprises a very small share.

For the standard products there is a solid market that Anorel supplies.

The recycling-derived fertilisers however are more difficult to market. Initially, the market can be somewhat wary and distrustful. However, through a lot of personal contacts and building up trust with the clients, Anorel was able to build a solid, loyal network.

Providing a reliable stock of water-soluble fertilisers remains important. One mistake could raise suspicions again.

Price and reliable experiences will therefore be the most important barriers.

## Horticulture sector

To market to the horticulture sector, the range of products needs to be catered to their needs. With straight fertilisers, there is only a small margin (+/-12%). Specialty products however, can have a margin of up to 200%.

In horticulture, recently a lot of growers have gone bankrupt. If cultivation goes well, market prices go down, so together with the current energy and freight rates, the margin on fertilisers is extremely small. But this also all depends on the kind of contracts they made with their providers. The price is therefore as important as experience and trust.

Convincing the cultivation advisors is also an important part of the job. Those advisors will analyse the residual water and will calculate the fertilisation needs based on those results, requesting tailor-made fertilisers.

Anorel also goes to visit their clients to see if all their demands are being fulfilled.

The horticulture sector requires different products depending on their fertilisation system.

Soil-based crops can more easily use organic or organo-mineral fertilisers, whereas other cultivation systems require either solid, water-soluble fertilisers to provide through drip irrigation, or liquid, straight fertilisers that are stored in tanks and is being dosed on the spot.

For marketing recycling-derived products, the business model should be absolutely clear and price-competitive with the conventional synthetic fertilisers.

## Private/Leisure sector

The private leisure sector only comprises a very small share of Anorel's market. They do not sell directly to private users, but to retail and for example gardeners.

For this market, the more important products are compound fertilisers that already contain most important nutrients, or specialty products like moss killers.

As this sector purchases fewer products in bulk, the price difference makes less of a difference.

As also legislation is important, and municipalities start to value sustainability more, it becomes easier to choose sustainable alternatives, for example: biodegradable iron chelate.

The private leisure sector will require more readily usable fertilisers instead of straight fertilisers that still need to be combined. Fertilisers will therefore need to cater to the fertiliser requirements.

The fact that sustainability starts to matter more for the government and therefore municipalities as well, could benefit the market for recycling-derived fertilisers.

However, price will still be an important aspect, though somewhat less than in the horticulture sector and especially in the hydroculture.

# Anorel

*“The private leisure sector requires more readily usable fertilisers instead of straight fertilisers that still need to be combined.”*

Josephine Cafmeyer, strategic manager, Anorel

## Supply Chain

There are still quite some barriers related to legislation. As there is a lot of evolution, for example the new Fertilising Products Regulation, it is a lot to keep track of. Moreover, as it is written in legal terms, it is difficult to comply with everything, even though Anorel means well.

Anorel is REACH registered for part of their product range to be able to import chemical products. The exporter (for example producers in China) can also be REACH registered.

## What is your advice?

To make recycling-derived fertilisers more competitive compared to conventional mineral fertilisers, grants are necessary, as well as a fairly simple legislation and easy transition.





# **Fertira (Belgium)**

# Fertira

*"80 percent of our products are exported"*  
Isabel Ranschart, Manager, Fertira

## The Company

### History

Fertira is based in Tielt, Belgium.

Fertira was founded in 1993 by Jacques Ranschaert and is currently run by his daughter Isabel. They process all kinds of waste streams of plant and/or animal origin.

They currently employ about 10 employees, have a yearly revenue of about 10 million euros and produce 26.000 tonnes of fertilisers on a yearly basis.

Fertira markets their products towards professional agriculture (arable crops and in a lesser part organic farming) and retail. This includes tree plantations and viticulture and export to other countries for banana and pineapple cultivation amongst others.

Fertira produces soil improvers, fertilizers with organic certificate, but they also specialize in making custom RDFs for their customers.

### Technology

Fertira barely uses mineral sources.

They mainly focus on the recycling of waste streams from the food industry such as the meat industry (bone meal, blood meal, ...), breweries (malt sprouts) or cacao production (cacao shells).

The production process consists of the following steps: Influx of raw materials, Storage in silos, Mixing the raw materials, Pressing, Cooling, Crumbling, Sifting.

Afterwards, they can package the fertilizers in sacks, boxes, buckets or bottles.



## The market

Organic farming has increased with about 11 percent in Europe, so their main market is growing. On top of that, Fertira notices that since COVID, people tend to be more involved with food production (e.g. more organic products), which also works in their advantage.

# Fertira

*'Since COVID, people seem to be more interested in organic products'*

Isabel Ranschart, Manager, Fertira

Fertira sells about 50 percent of their products to professional agriculture and 50 percent to retail.

The domain of agriculture includes arable and organic farming, tree plantations and viticulture, for example: the Champagne region in France.

80 percent of their products is being exported and 20 percent is sold in Belgium (primarily for organic farming).

The most relevant commercialization barriers are mainly supply-chain issues. For their production process, Fertira relies on the amount of waste streams their suppliers can provide. At this moment, the demand is higher than the supply. More suppliers are thus highly desired.

About 50 percent of Fertira's products go to professional agriculture (including organic farming), while the other 50 percent goes to retail. Horticulture and the private sector only make up a minor portion of Fertira's market.

## Horticulture sector

Some field cultivation vegetable crops such as cucumbers and zucchini already comprise a very minor part of Fertira's target market. Lettuce also used to be marketed, yet is dying out. As these are not growing markets, there is not a lot of room left for expansion. But there may be some options in foreign markets: for example the production of organic bananas.

The main barrier in horticulture is the price. Competition is fierce within the Belgian horticulture market and the profit margins are tight. That is why there is a reluctance to switch to RDFs that are not always equally price-competitive.

On top of that, this sector needs other fertilisers rather than fertilisers from organic origin.

As most of the horticultural crops are cultivated over a short time, the sector mainly needs water-soluble fertilisers that quickly release the nutrients. To be easy to use, they could be combined with irrigation or easily applied in the substrate. Soil improvers are also needed.

Organic products release their nutrients more slowly and are most often not water-soluble.

## Private/Leisure sector

There is no interest in expanding to the leisure sector, as they currently have some sales to sports and golf fields, but it is rather limited. Other fertiliser producers focus more on this market, so there is specialised competition as well.

Fertira feels that this sector is not ready yet for massive RDF adoption.



# Fertira

*“Getting to know the target market helps to build a solid network of regular, loyal clients.”*

Isabel Ranschaert, Manager, Fertira

Some of the main barriers for the private/leisure sector are:

- The public is not ready for it, as this is a huge step for them
- For example: the fear of “dirty, smelly shoes” from RDFs used on golf fields
- RDFs require longer time to go in effect than the classic mineral fertilisers
- They mainly want a fertiliser that is quickly dissolvable
- Convincing representatives of this sector is quite time consuming

Especially the golf sector needs more mineral, pure and quickly dissolvable fertilisers that caters to their image (e.g. in terms of smell). Having contacts within the sector also helps.

More and more cities or municipalities value circularity and try to raise awareness about using sustainable products, which could start increasing the use of RDFs in this sector.

## Supply Chain

The main barrier in terms of the supply chain is mainly the uncertainty of suppliers, since Fertira is completely dependent on waste streams and they only search for a max. 800 km around their company to minimize transport.

On top of that, not all waste streams are allowed to use in fertilisers due to legislation.

During their first years, Fertira really focused on the niche of marketing organic products. Their specialty remains the creation of custom RDFs, based on what a customer specifically needs.

They also focus on a qualitative and fast delivery. Yet the demand has become larger than the production capacity. Allowing more waste streams in legislation could increase the production.

## What is your advice?

The easiest way to sell RDFs is catering to the market. Getting to know the target market and building a solid foundation of trust helps building a solid network of regular, loyal clients.

# DCM (Belgium)

## The Company

### History

DCM is a family company and part of the holding 'Group De Ceuster', which is made up of multiple companies within plant care, animal care and biosciences.

After 45 years, DCM currently holds 220 employees in offices in Belgium, the Netherlands, France, Germany, Austria and the USA. Its yearly revenue is 95 million euros.

DCM produces a wide variety of products in granular, crumb or Minigran® form. A pellet is too big for certain applications like lawn fertilisation and mixing in substrates. A crumb can contain fracture areas that can break during application and create dust. Minigran® is a small, but dust-free granular, perfect for embedding in substrates or trays, falls between the grasses and is easily spreadable. This Minigran® granule is unique to DCM since 2001.

Next to diverse products such as lime, herbicides, bark, DCM mostly produces organic and organo-mineral fertilisers in both liquid and solid form.

### Technology

While the mineral fraction of the organo-mineral fertilisers cannot be from recycled products, the organic fraction contains a lot of recycled nutrients.

Next to manure, some raw materials are of animal origin from various meals such as bone meal, feather meal, while others are from plant residues such as maize or wheat gluten, grape seed oil meal, potato by-products...

### The market

DCM currently focusses on two major markets: the professional market and retail.

Due to these broad target groups, DCM has a large, stable market position.

DCM focusses on providing products catered to the wishes of the clients, while importance is also attached to the soil structure, soil life and sustainability.

The most relevant barriers DCM faces in the commercialization of recycling-derived fertilisers is the difference between the different legislations: European, national, bio-certified and the price and availability of some "organic" raw materials.

Next to retail, DCM targets a combination of the professional market, including horticulture (both conventional and organic, arboriculture, floriculture, ...), agriculture (mostly row-fertilisers), substrates, professional turf and landscaping (golf and football fields, ...).

## Horticulture sector

There is always an interest in expanding. There is also a growing interest in organic growing, sustainability, and soil health.

There is more interest in resilient cultivation from the belief that this is healthier, and/or from the legislation where there are fewer opportunities for “phyto”.

The main barrier to expand in the horticulture sector is a supply-chain issue: the rising demand for raw materials by other industries.

In the context of reuse of residual flows, it is important that the release of nutrients from these residual flows is known in quantity and time. In this way, growers know whether, from the start to the end of their cultivation (in terms of length of cultivation), the desired nutrients can be given or whether other fertilisers should be used in combination.

DCM believes that it would be good to market technical information, trial results highlighting the effectiveness of the organic solutions and satisfied customers' stories sharing their successes and best practices.

## Private/Leisure sector

DCM is currently expanding in the private/leisure sector and they sense a growing demand. Vegetable gardening has known an increasing interest with a clear preference for organic products.

Pure organic recycling-derived fertilisers require longer time to go in effect than the classic mineral fertilisers, as the nutrients in chemical fertilisers are quickly available. Organic fertilisers must be converted in the soil/substrate before the nutrients present are available to plants. These are some of the main barriers DCM encounters while expanding in this sector.

The professional turf still demands organo-mineral fertilisers, while vegetable gardening prefers organic products.

DCM mentions to make people more aware about the importance of a good soil structure and a healthy soil life as a basis for a healthy garden.

## Supply Chain

DCM finds that the main barrier in the supply chain is, next to legislation, that the quantity of the final products are mainly depending on the raw materials. For example, if less meat is consumed, less meat and bone meal will be available.

Occasionally, new recycling-derived products become available, but it is important to look into how it can be used and whether it is available all year round.

Next to quantity, also the quality, such as the stability of flow and the presence or absence of undesirable elements (heavy metals, contaminants, ...), is evaluated.

DCM is looking into and investigating the possibilities for new products themselves to overcome these barriers and works closely together with a research centre for innovative products or processes.

## What is your advice?

DCM recommends there should be a greater focus on the soil structure, health, soil life and the organic matter in the soil. Next to that, the use of recycled nutrients should be easier in terms of legislation.



# **Green king Composting (Ireland)**



# Green King Composting

*“As a small business, we can offer tailor made, sustainable and locally produced products delivered straight to your door”*

## The Company

### History

GreenKing Composting has been established for 20 years. Their main depot is based in County Wicklow with a second facility in Sandyford in County Dublin. They accept green garden waste from landscapers, householders, and councils. Most of the waste goes to Bord na Mona a semi-state climate solutions company in Kilberry, County Meath to be composted.

There are two parts to their business, tree surgery which was established 40 years ago and the green waste end of it. It came about as they had difficulty finding places to dispose of their green waste and saw the potential in developing a market for the production of sustainable locally produced compost.

GreenKing Composting is a small company offering tailored compost mixes to its customers. In Sandyford, they take in about 10,000 tonnes and 2.5 tonnes in Wicklow each year.

GreenKing Composting produces two products, bark chips and compost from green waste that can be used as a soil enricher. They produce peat-free compost, enriched topsoil and screened topsoil.

When screening their compost, they leave a certain portion of wood chips in it as they found the landscapers they supply to prefer a chunkier compost. Also, depending on their customers' needs, they mix it with soil and sell it as enriched soil.

### Technology

Their compost is produced from green garden waste including grass, leaves branches and hedging using an open windrow.

The raw materials are initially shredded then added to the windrows for several months. The waste is turned quite frequently for the first few weeks, but as the compost matures and in the winter months this becomes less so. The whole process can take many months. Often the larger wood chips that do not decompose are re-shredded and go through the composting cycle again.

They find that the weather does not have too much of an impact on the production process. The rain only penetrates the first few inches and doesn't go any deeper. The rows are also turned less frequently in the winter to prevent them from getting wetter.



Figure 1: Green waste being shredded at the Wicklow facility for compost production.

# Green King Composting

“We have been supplying the same loyal customers for the past 20 years”

## The Market

Their products are available to members of the public, professionals and local government associations. It is used by the Office of Public Works in Phoenix Park, Dublin and in the gardens around the President of Ireland's house. They also sell it to various County Councils in Dublin however, more recently they are seeing a shift from compost to bark mulch mainly because it is low maintenance, looks tidy and keeps the weeds down, requiring fewer people to manage it.

The landscapers bring their green waste to be composted and collect bags of compost while they're there. GreenKing Composting delivers their products to businesses and households on demand.

They are supplying the same loyal customers for the past 20 years. However, at GreenKing Composting, they have noticed that their clients are not using as much compost as they used to. In particular, landscapers are using a lot less compost than previous.

According to the director of GreenKing Composting “We have customers now that would have bought 100 cubic meters off me 15 years ago now, now they will not buy any, now it is all bark”. Their customers have replaced compost with fine bark because it looks the same but it keeps the weeds down.

## Horticulture sector

It is difficult in the horticulture sector in Ireland for a small business like GreenKing Composting to break into the market.

Currently, they produce compost that is bagged by the customer onsite. To bag their products themselves would incur large costs. According to the Director of the company, “All of the bigger composting facilities have large bagging plants. We looked at providing this service before, but to install a small bagging plant just wouldn't be feasible”. They continued to state that they just couldn't compete with the larger compost producers as they would have to be producing large quantities to sell it at a price that the Garden Centres will buy.

GreenKing Composting has been approached several times by industry and the horticulture sector about supplying compost, who are willing to buy everything they produced, however, they couldn't produce the compost for what they were offering. They have also been approached by farmers but they found the farmers more or less wanted it for nothing. Another barrier to entering the horticulture sector is a lack of understanding of what it takes to produce good quality compost. They are licensed by the EPA to take up to 40,000 tonnes of waste, however, they don't plan to operate at that capacity and are more focused on delivering tailor made mixes on a small scale. Taking into account the cost of diesel, the labour that goes into shredding the material, and the time it takes for the waste to break down into compost they cannot compete with larger producers.





# Green King Composting

*'Our products are available to  
members of the public, professionals  
and local government associations'*

## Private/Leisure sector

The main barrier they face in expanding into the private/leisure sector according to the company director is "Education and that people are not looking for this product". They found that they were busy during COVID because people preoccupied themselves in their gardens, but now they find that everyone is so busy with life that the garden comes last unless they are avid gardeners. They consider many people are not into their gardens and that is why they are increasingly turning to bark mulch for low maintenance and decorative purposes. "A lot of it comes down to people wanting an easy life".

In terms of marketing to the private and leisure sector, the company this year had done a lot of work on their website. They have recently started to sell their product online, to try and get it recognised more in the public realm, which is something that they had never done before. Previously they found that people came to them, but now they have a shop on their website where the customers can pick wood chip bark or compost mixes.

## Supply Chain

In terms of the supply chain, they try to ensure that their product is available to all their customers. They can come to the company directly to collect their compost, or they deliver any quantities that are required.

As they are a small company, it allows them to personalise their supply chain and get it to the consumer in whatever way they prefer.

## What is your advice?

It is education, farmers, and the private and horticulture industries that have to value the nutrients that are in it and recognize it as a valuable resource. In terms of favouring market uptake, the landscapers know that they should be using compost but it all comes back to costs. According to the company director, "They don't want to have to go back to somebody's garden because there are weeds in it two months later, they want to do the job, get it done and then finish with that customer".

From a farming point of view, the cost is a huge factor along with education. "Traditionally farmers think compost is just leaves and grass and wonder why they should pay for it. They're already paying massive amounts of money for fertiliser. If they were to go out and spread compost on a field and plough it in it would do the same job as a fertiliser". Overall, it is education, farmers, and the private and horticulture industries that have to value the nutrients that are in it and recognize it as a valuable resource.



# **Natural World Products (Ireland)**

# Natural World Products

*'Over time and seasons of application, you start to see the real benefits'*

NWP Chief Executive, NWP

## The Company

Natural World Products (NWP) is the largest organics recycling company in Ireland. They are based in Northern Ireland (NI) with primary processing facilities located in County Armagh and outside Belfast. The company was founded over 30 years ago. They currently manage over 300,000 tonnes of primarily household organics annually. The company is at the forefront of its industry in Ireland and the UK, with a focus on delivering sustainable solutions that will work practically and economically over the long term to address key structural problems and create positive outcomes for our environment and the places we live.

## Fertilisers/Products

In their rawest form, NWP's base products are best described as soil conditioners and multi-purpose composts. They are not a direct replacement for synthetic fertilisers but help to significantly reduce the quantity of mineral fertilisers used in agricultural settings. The products have a fertilising effect with plant-available levels of NPK released slowly over time while returning organic matter, crucial for growing sustainability, back to heavily farmed soils. According to NWP's CEO, "After the first couple of applications, the fertilising effect is evident, but 3-4 years of application is when you start to see the real benefits".

NWP also produces several other organic and peat-free products geared towards the horticultural market including peat-free multi-purpose compost, vegetable compost, John Innes mixes and soil conditioners that are available pre-bagged or in bulk. They are increasingly targeting their focus by blending other non-peat derived organic products to create dedicated growing mixes for specific growing applications in both agricultural and horticultural markets - taking account of specific and relevant factors such as soil composition in different geographical locations for instance. Several ongoing research projects are currently live with Queens University Belfast and other stakeholders.



*Figure 1: Natural World Products processing facility in Belfast.*

# Natural World Products

*'Neighboring farmers look into clients' fields and wonder what they are using on their soil. Over time and with a real focus on quality we have found that demand is not an issue'*

NWP Chief Executive, NWP

## Technology

Natural World Products is focused on using raw organic materials from domestic brown bin collections and recycling centres. They accept comingled food and garden waste (brown bins), clean source-segregated food waste and garden/green waste from Local Authorities across Northern Ireland and the largest commercial collectors in the Republic of Ireland. They use In-Vessel Composting (IVC) technology at their Belfast and Armagh plants. This process effectively accelerates a natural process of decomposition through the creation and control of optimum conditions.

This allows microorganisms already present in incoming material to grow and multiply, breaking down organic materials in the process. During this aerobic process, temperatures reach over 70°C within the airtight in-vessel tunnels with the resultant pasteurisation process killing pathogens and other harmful bacteria. IVC is a robust and well-proven technology, capable of dealing with the variable nature of municipal waste streams to enable the production of high-quality soil conditioners and compost products.

Repeated screening of material at various stages of the process, combined with picking lines and strict controls around incoming feedstocks, removes unwanted contaminants from the process to ensure the highest quality finished product.

Quality control procedures are engaged at all stages to ensure the finished product meets the strict requirements of BSI PAS100, where contaminants can be no more than 0.25% by weight with independent third-party testing and audits a routine part of the process. Contract and feedstock management is key according to NWP - being brave enough not to accept unduly contaminated waste streams is crucial.

The primary barriers NWP has faced in producing their products are how and from where the organic feedstock is collected. The quality of those collections is important and directly affects the ability of the composting facility to produce a high-quality product. They have expanded their infrastructure, growing its scale and size and have focused on feedstock and product quality over the years. Historically, they found that people were reticent about the concept of using compost from "waste", as there were negative connotations associated with and peat-based growing media dominated horticulture. However, over time, through demonstrably consistent levels of quality and growing performance, helped by increasing public awareness around the challenges of climate change, carbon capture and soil health, this has completely changed.





# Natural World Products

*'Consumers in horticulture are increasingly aware of sustainability. They are looking for quality peat free alternatives'*

NWP Chief Executive

## The Market

NWP has a solid contract base and has invested heavily in improving its infrastructure and processing capability as a result. The company has worked on a highly collaborative basis with key customers to educate householders about the importance of using brown bins effectively and the economic as well as environmental benefits that can accrue as a result.

In Northern Ireland, they worked with local authorities to improve the uptake and use of brown bins (the most effective and economical way of collecting household food and garden waste). Furthermore, they helped councils achieve significant revenue budget savings as a result - in addition to higher recycling rates.

Increasingly, people are seeking out peat-free growing media and want to understand their impact in helping to combat climate change. Correct and sensible use of the brown bin affords every householder an opportunity to play a key part in a successful and local circular economy - that is also playing a critical role in addressing other structural issues such as soil health, the protection of peatlands and a fair transition to more sustainable farming and land management practices.

## Horticulture Sector

Consumers in the horticulture sector are looking for peat-free compost products. Composts produced by NWP are used across the horticultural sector as more environmentally sustainable alternatives to peat-based growing media. Their products are used for many applications including growing, soil improvement, landscaping, tree planting, ground restoration and establishing strong foundations within natural habitats.

One of the main challenges of expanding into the horticulture sector is the availability of high-quality feedstock. The growing media market in Great Britain for example is around 1.5 million cubic meters annually - with over 95% of this historically derived from peat. Composters would need access to hundreds of thousands of tonnes of high-quality waste feedstocks (such as those available to NWP in Northern Ireland) to make a significant dent in that market. For example, 100,000 tonnes of organic waste might result in c.40-50,000 tonnes of retail ready compost in raw form. Over 50% of the volume is lost during the process itself as moisture is driven out and material broken down.

# Natural World Products

*'You can't just look at waste, environment, agriculture, energy or economics individually, sustainable high quality growing and soil improving solutions are a combination of them all'*  
NWP Chief Executive

What works to market in the horticulture sector is the increasing interest customers have in sustainable quality peat-free alternatives. NWP is transparent about what its products are made from. Historically, the issue of "waste" was a barrier - but the market is changing and customers want a high quality, low carbon footprint product that contributes to the circular economy and that is sustainable. They also find it works a lot better for growing purposes than lots of alternatives, typically cheap, peat-based equivalents.

Another aspect that helps to market products in the horticulture sector is certification by the Organic Soils Association in the UK. This assures customers of the high-quality products NWP produces. In addition, it allows customers to readily buy a high-quality product from a sustainable source and they know they are doing something good for the environment in the process. According to the NWP CEO, "Legislative changes and increased awareness around the environmentally devastating practice of peat extraction is forcing change. People want quality, sustainable products."

## Private/Leisure Sector

This sector, until recently, has been dominated by cheap peat-based supplies. NWP has identified that competing with these has been a barrier. They found that producing only one product, such as a multi-purpose compost or a soil conditioner, was not enough.

Consumer wants a range of products to choose from, so they increased the product range to help address this. In the UK, from 2024, there will be a ban on peat-based products, and many suppliers are looking for alternatives. Since they have developed their range, they have found that opportunities are opening up further and this is expected to continue.

Another barrier NWP identified is a lack of education around the benefits of using peat-free growing media - peat having long-since been marketed as the 'gold standard' in horticulture. This is again changing and NWP has its own Community and Outreach Department, headed up by experienced horticulturalists dedicated to the education of community groups and other stakeholders around the benefits of peat-free growing media.

Consumers in the private and leisure sector are looking for peat-free sustainable products with a low carbon footprint. The products at NWP are used by golf courses, sports pitches, turf and vegetable growers, landscapers, garden designers, and public and private gardens. Their New Leaf Compost products are recognised as nutrient-rich premium composts, allowing for healthy plant growth without the negative climate impact of peat extraction.

# Natural World Products

## Supply Chain

The main barriers in the supply chain of their products are the supply of good quality feedstock and competing with heavily subsidised AD sites in Great Britain and Northern Ireland. Further concerns include the availability of sustainable resources from which to make and further develop quality peat-free compost products.

Governments and legislators understanding the key importance of garden waste and not only focusing on food waste is also a key area to highlight - collected together these are a key resource to address the soil health crisis.

## The Advice

NWP believes farmers will need to be remunerated on the basis of how they manage nutrient levels and organic matter content in their soils - as a tool to help a fair transition away from methane-heavy farming practices and moves toward a more sustainable agri-food sector. Incentives will feed into farmers wanting to use high-quality organic fertilisers, soil conditioners and blended products. The next phase for NWP will be to work with farmers in bespoke ways depending on soil composition, rotational cycles and the types of crop they wish to grow.

They plan to make bulk blends tailored to growing needs in particular areas. This will be achieved by working with agronomists and scientists and coming up with optimal mixes and application advice.



*Figure 8-9: New Leaf Compost produced for the private/leisure sector used at an allotment and for growing grass /sports turf.*