



environmental
services
association



Feedback on the quality of compost and digestate products

Annex 1: introductory text and survey questions as posted on Survey Monkey

A cross-industry working group is delivering continuous improvement in the quality of compost and digestate products. We are seeking feedback from digestate and compost users on how well suppliers are meeting your expectations.

The survey is very short and *all information provided will be anonymous* - it will not be possible to link responses to any individual or organisation.

The anonymous results will be used to provide feedback to the compost and anaerobic digestion industries and to target practical action to make sure products are fit for purpose.

1. Does your feedback relate to compost or digestate?
 - Compost
 - Digestate
 - Both

2. Does your feedback relate to a recent experience (eg within 12 months)?
 - Yes
 - No

3. How often have you used these products?
 - Once
 - Couple of times
 - Regular user

4. Have you had a positive experience of using compost or digestate? Please indicate why (tick as many boxes as are relevant):
 - Improved soil structure
 - Improved soil water holding capacity
 - Improved drainage
 - Used less bagged fertiliser
 - Increase yields
 - Clean product
 - Low odour
 - Ease of application
 - Other (please describe): [INSERT FREE TEXT BOX]

5. Have you had a negative experience of using compost or digestate? Please indicate why (tick as many boxes as are relevant):

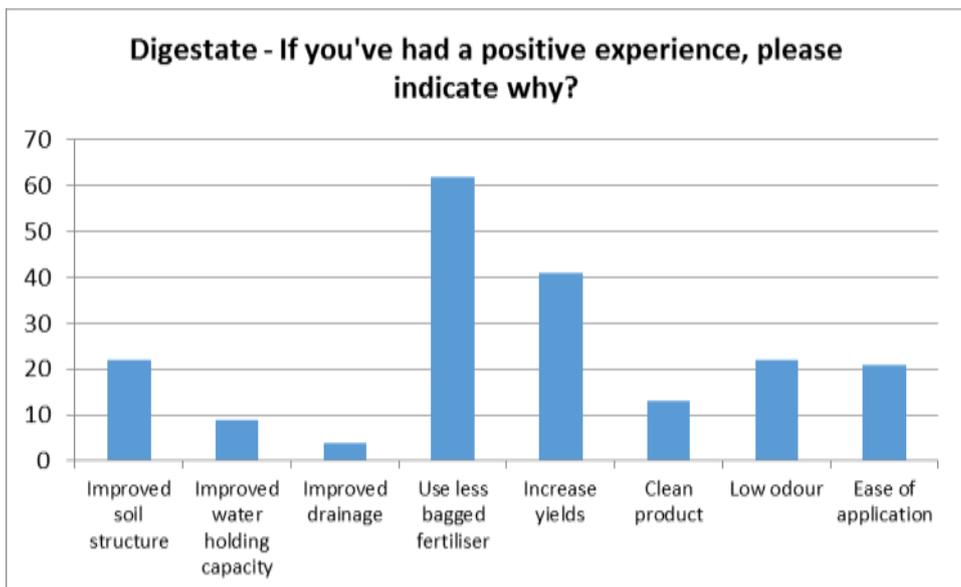
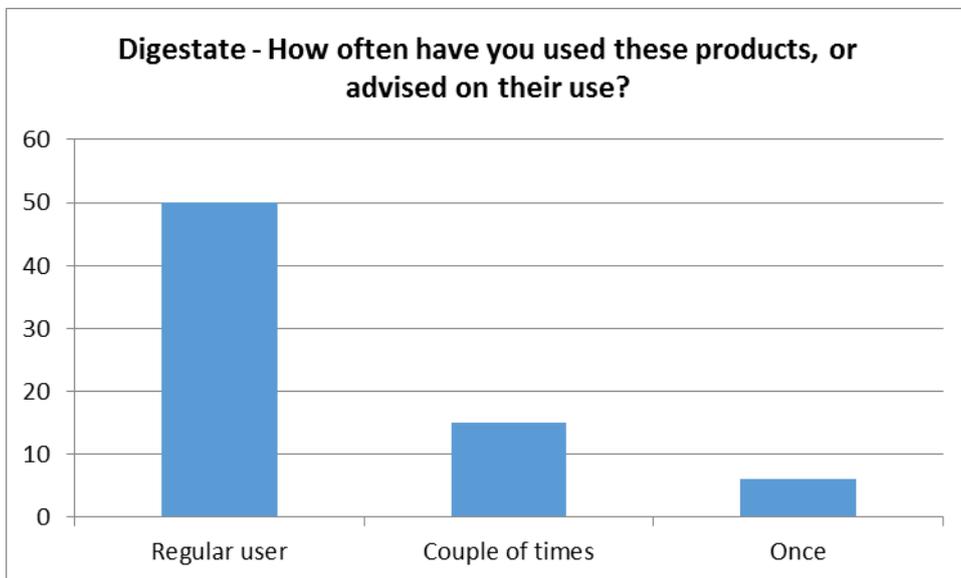
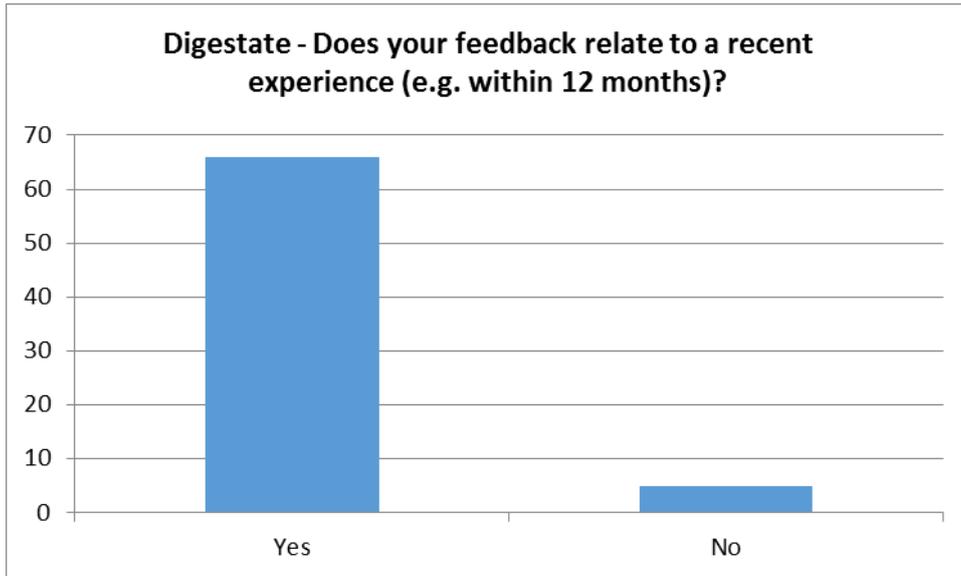
- Couldn't check the product before it was applied
- Soil compaction
- Harder to balance crop nutrition
- Reduced yields
- Problems with plastics
- Problems with sharps
- Odour problems
- Difficult to apply
- Other (please describe): [INSERT FREE TEXT BOX]

6. How well did the compost or digestate meet your expectations?

[INSERT SMALL TEXT BOX] (on a scale of 1-10, where 1=very poor / 10 = very well?)

Feel free to explain why: [INSERT FREE FORM TEXT BOX]

Annex 2: survey responses - digestate



Digestate - If you've had a positive experience, please indicate why – Other (free text comments):

All good

Better crop establishment Odour varies Ease of application varies due to topography, application methods. Soil conditions, height of crop, distance to travel from source

Can have a very strong odour and caused problems with neighbours

Have product available within business, Cheap nutrition

Helps build soil k for Rye & Maize. Becomes available in second year from our experience. Benefits are long term too early to see yet but have noticed a visual difference in soil. Application technology big factor

I have used a lot of digestate from [named operator removed]. Generally clean and low odour but there can be bad spells of plastic etc. The N is fast acting and less bagged fertiliser is required.

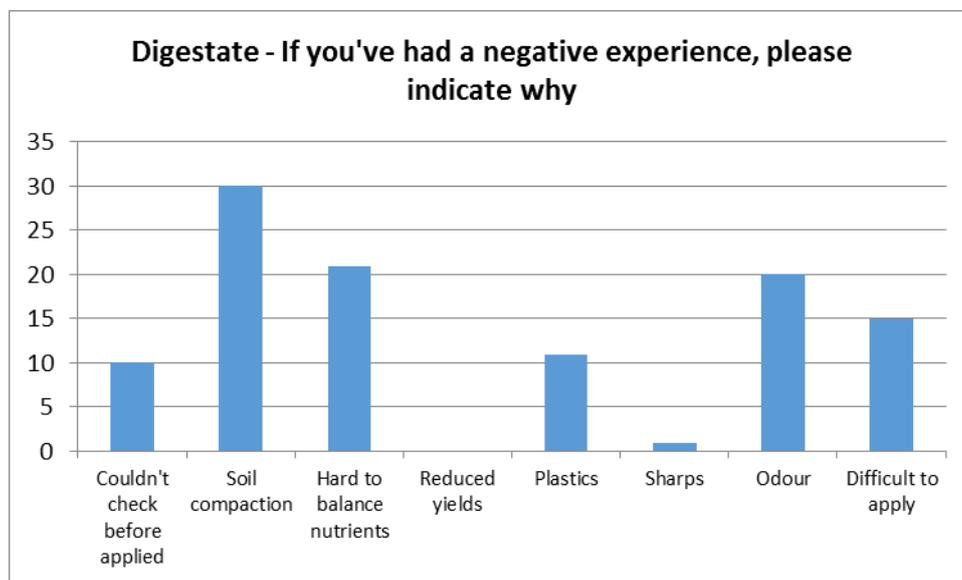
It does everything expected

on-going research projects using digestate fibre as a peat replacement for horticulture use

Part of the service included advice on including organics as part of a fertiliser plan and including soil testing as a routine practice. On grassland in my experience this has not been common practice. This is why I believe many users have seen improved performance

Re digestate (liquid and solid components) Important to get a full analysis done of the product to know what you are applying, does vary depending on the diet. In many cases has replaced bagged fertiliser, particularly on spring sown crops

The fact that it contains all macro and micro nutrients



Digestate - If you've had a negative experience, please indicate why – Other (free text comments):

Balancing pH

Evenness of application and timing

Far greater quantities were being applied than what was ordered (suspect Digestate plant were trying to get rid of product)

generally all positive but dependent on feedstock

Mud on road from spreaders leaving after heavy rain.

No problems

Storage can be an issue as this has caused odour complaints from neighbours

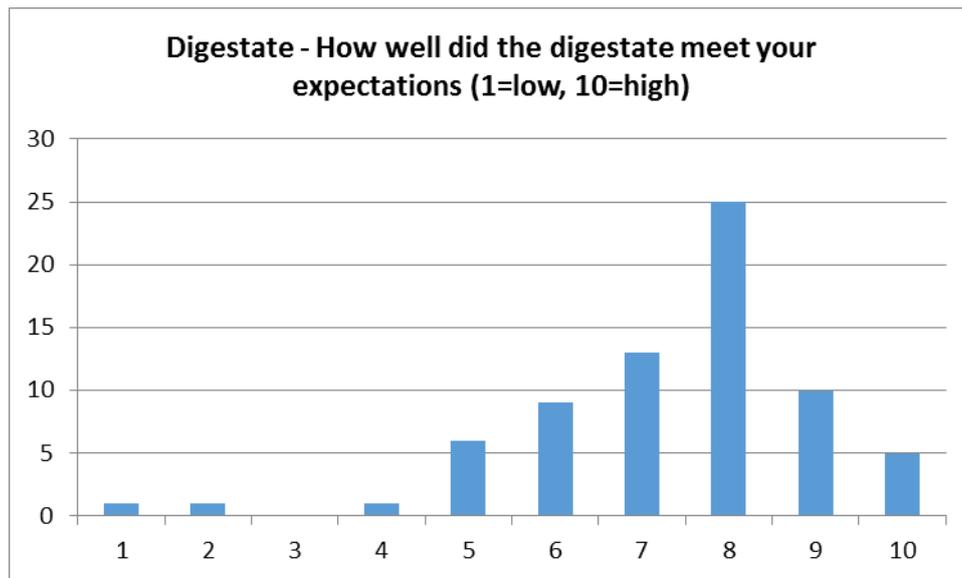
Storage issues. Worm Kill

To apply whole digestate with minimum volatilisation losses necessitates the use of heavy equipment and to get the timeliness of N applications means there is a higher risk of compaction. Odour is hazard which need to be managed and in my experience plastic has been a problem in the past but much less so in recent years. Having sufficient storage facilities is also key to optimising N efficiency

Using the correct contractor with correct equipment vital. Timing to growing crops also critical

Very good nutritional product but Cost of application is greater than fertiliser value

Very wet digestate was delivered. So took up large area of field.



Digestate - How well did the compost/digestate meet your expectations - Feel free to explain why (free text responses):

a very cost effective source of major soil nutrients. Other nutrient components also helpful and benefits relating to adding to soil organic matter. These benefits balanced by spreading and odour challenges. It is more difficult to predict the nutrient (N) release to the crop.

Although good nutrient supply, the quality simply isn't good enough. when a company achieves PAS110 there appears to be no further checks from WRAP to assess the quality. EA raise queries about the quality but it appears it is impossible for a company to lose their PAS accreditation.

Application cost and transport v artificial costs of product a fine line. Again as farmers by using it we feel it is correct without much science.

applying liquid digestate in the spring when ground conditions aren't perfect can be challenging. heavy loads and wet ground aren't compatible.

As part of a fertiliser plan digestate has substituted a lot of bag N plus some P and K and saved some farmers considerable sums of money over the years. In the early years there were problems with plastic contamination but process improvements have dealt with this problem. The bulky nature of digestate gave rise to the problems shown above. Digestate (unless processed) has a fixed analysis and there is a potential for the build of soil nutrient imbalances in some situations

Cost effective Increased yields Very very pleased

Digestate applied before osr in rotation has enabled us to not apply any bagged fert in the autumn. The product is a lot cheaper than buying in phosphate and does not become locked up in my soils.

Digestate has much more ready available nutrients than had expected

Digestate I have used has been low odour and very high available N leading to some great results. But we have had severe problems with plastics in the product. Also availability of the product has been problem due to lack of storage at the AD plant meaning we take out what is produced as it is produced. I would make it obligatory to have storage onsite.

Digestate is brilliant product if the plant produces the correct specification and applies the correct quantity/ ha to give the recommended nutrients. Problems come with application timings due to contactors workload, weather, distance, breakdowns etc

Displaced bagged N and can be applied in the Autumn promoting emergence

Food based whole digestate, a Great organic product, but the handling logistics and odour issues are a great concern.

good for soil structure. use less inorganic fertilizer Difficult to determine how much n available for crop at critical growth stage. Have had to invest in application equipment that injects into soil

Good product that is free.

High in potash and high ph good for sandy acidic land

I dealt with around 20 customers. Some had issues with plastics and diluted material from lagoons. Some had a great experience with fantastic yield increase.

Last spring in poor soil and weather conditions the digestate did seem to get crops moving more quickly where it was applied. Client tells me this was carried through to yield.

Liquid digestate is a valuable replacement for bagged fertilisers but odour, spreading logistics and the potential for the product to end up in field drains are big issues.

Never as simple as bagged Fert. How accurate is a manure spreader? How much is it really worth not just book figures? Is it actually a good source of soil organic matter?

Positives Nutrition wise it a very useful due to the high available nitrogen content, large reduction in need and cost of bag nitrogen. There is also a wide range of other nutrients. Spreading was carried out by company supplying the digestate. Negatives odour causing problems with neighbors. Analysis is always out of date and when it has been stored for a period of time can be different from original analysis. There is also becoming common practice to see a large volume spread to seed beds in autumn. With applications in the region of 220kg/ha of available nitrogen on winter wheat, this has resulted in poorer establishment and available nitrogen being lost before the crop needs it in spring. I would imagine the driver for this is the are producing ad digestate 365 days a year and there is insufficient storage to allow them to spread when the crop most needs it in spring.

Potential for reduced bagged N enormous. Issues are plastic in material, heat of material if straight from plant, and the problem of spreading large volumes onto wet tramlines in the spring. However improvements will over time make a very effective organic N.

product is ok, need to get farmers to accept that nutrient availability is high and cannot be applied all the year. need to treat like liquid fertiliser

Still learning, timing, consistency of product, spreading accuracy and reliability of analysis and availability of nutrients leave a lot of variability

The potential long term soil damage/compaction caused by applying large volumes of digestate with big machinery outweighs the yield benefits. The digestate product (and possibly its spreading cost as well) would have to be free of charge to make it worth using on this farm again.

Trials to date have been very encouraging - management of nitrogen will always be a challenge, but the low levels of RAN are an advantage. using different methods of irrigation, knowledge of the management of the material has improved. Research will continue with the aim of developing a product

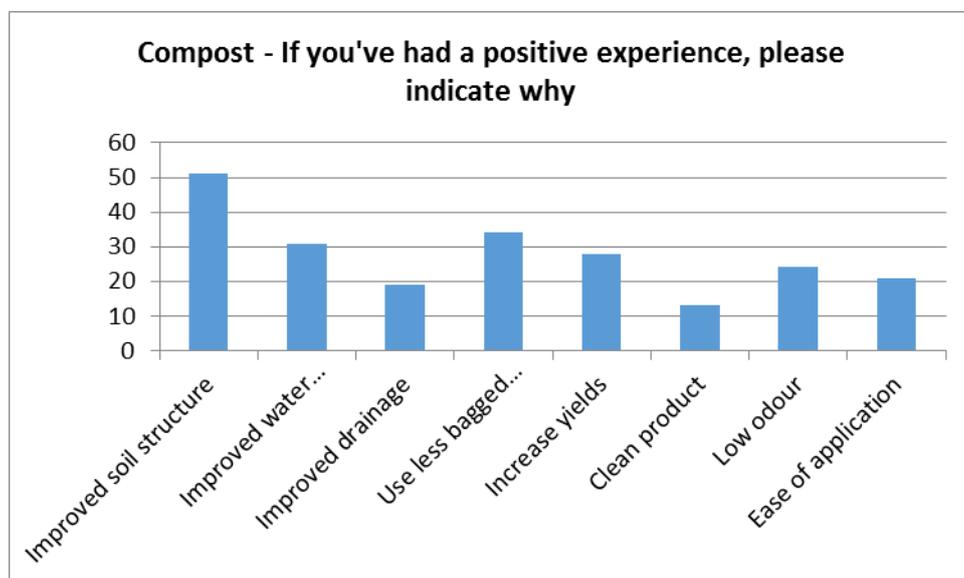
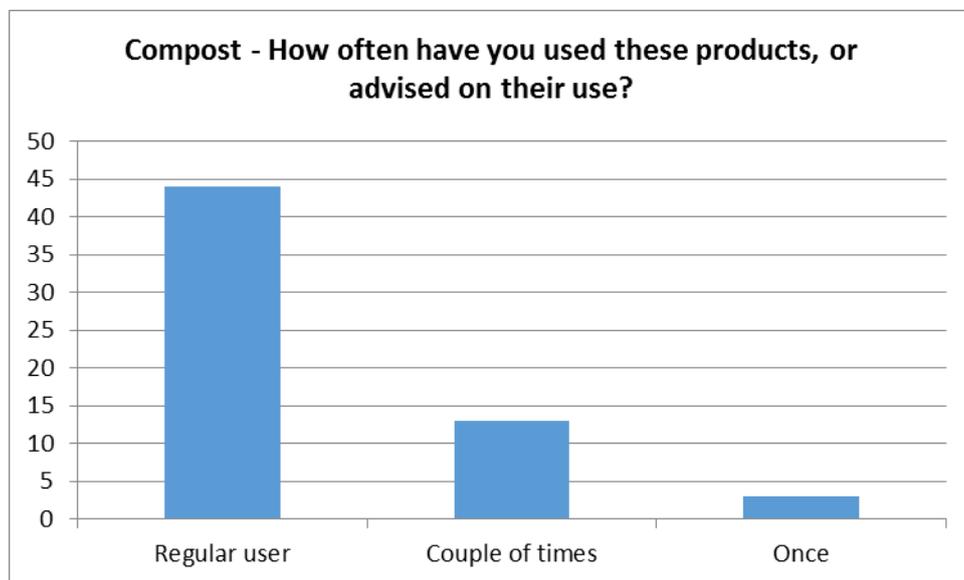
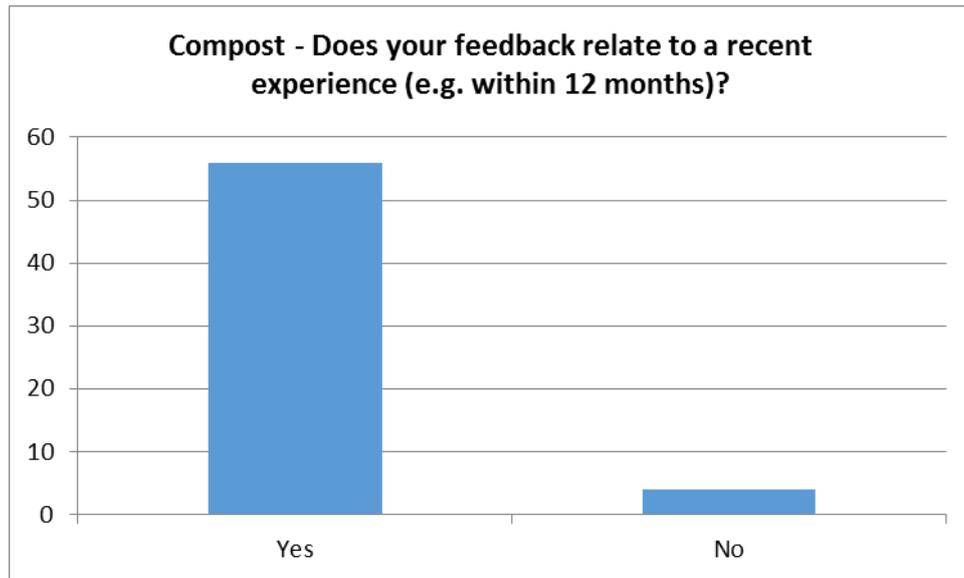
Unsure fully as wrong to make judgment within two years And different blocks of land

Valuable nutrient at low cost, but have to rely on the sampling accuracy and nutrient analysis data from the AD plant. Concern about the long term effect of human food digestate on soil biology, chemistry and physical state,

particularly as a result of the product content not quantified, timing of application and the scale of the application equipment. Some concern about possibility of bacteria from a human food digestate being the cause of poorly fermented grass silage. High pH digestate - may result in a problem, long term. Medium clay soils having naturally poor drainage in a high rainfall area.

Very slow release and not all available in growing crop, expensive to apply over distance if low in N, however other hidden benefits that you cannot get out of bag, such as macro nutrients.

Annex 3: survey responses - compost



Compost - If you've had a positive experience, please indicate why – Other (free text comments):

A good way of applying extra nutrients whilst maintaining Livestock manure limit compliance on NVZ farms. The low N availability status helps here.

Enhanced vine vigour

Field grown trees for sales to the landscape trade All my applications of PAS100 have delivered astonishing results both root and shoot development. We do not need to apply bag fertiliser and we improve the O Matter by drilling a special grass mix which reduces weeds and mowing.

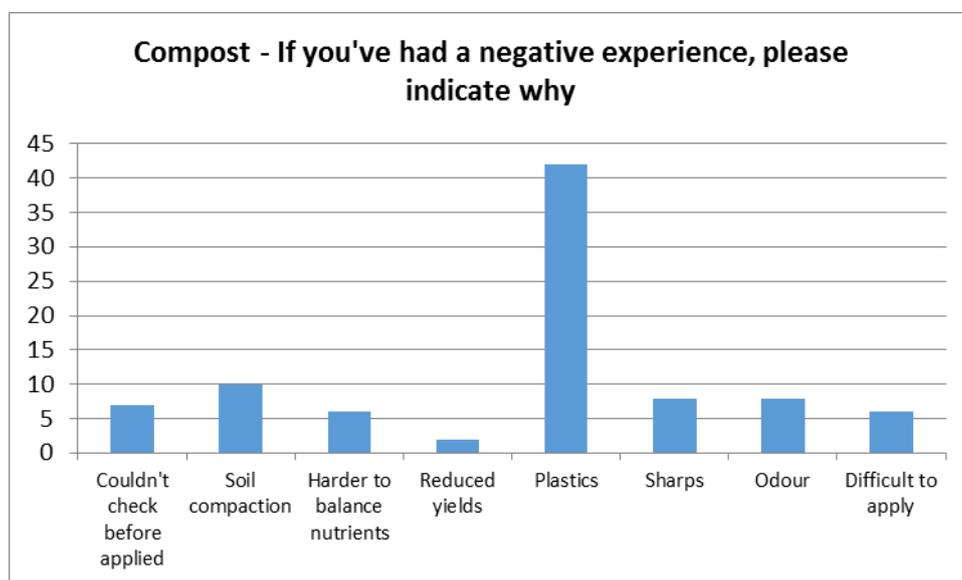
Improved establishment, warming of soils.

in organic production

increase organic matter in the soil

soil ph remaining constant for longer

this was using a good product with Pas 100 approval



Compost - If you've had a negative experience, please indicate why – Other (free text comments):

Compost is too woody. When using compost as part of a nutrient balance soil indices are dropping. Price is too high.

Green compost particle size needs to be small enough to avoid large wood particles.

Huge weed population increase. A lot of grass weeds that are not usually present in ag arable fields

increased spreading costs compared to conventional fertiliser

Increased weed pressure following use. Applied prior to dry seasons, seems to make the soil more difficult to wet = more irrigation.

Introduction of weeds to fields. eg Wild carrot and some grass weeds (fescues).

Minor crop loss where it was delivered before harvest and tipped on the edge of the field.

No problems - only that finding application machinery to fit 1.8 m access .

None

Not mature ie Not fully composted or rotten

One type of bagged compost was very thick and had poor structure. Plants did not do well when potted in it.

Out of date analysis record

plastic not a big problem but feel more could be removed

plastics contamination a major issue and not sustainable

product is obviously very bulky and haulage and lorry movements to field has caused some problems with locals
sometimes I have seen N lockup.

Supplying and spreading compost before a deployment had been agreed.

too early to give response as applied this autumn

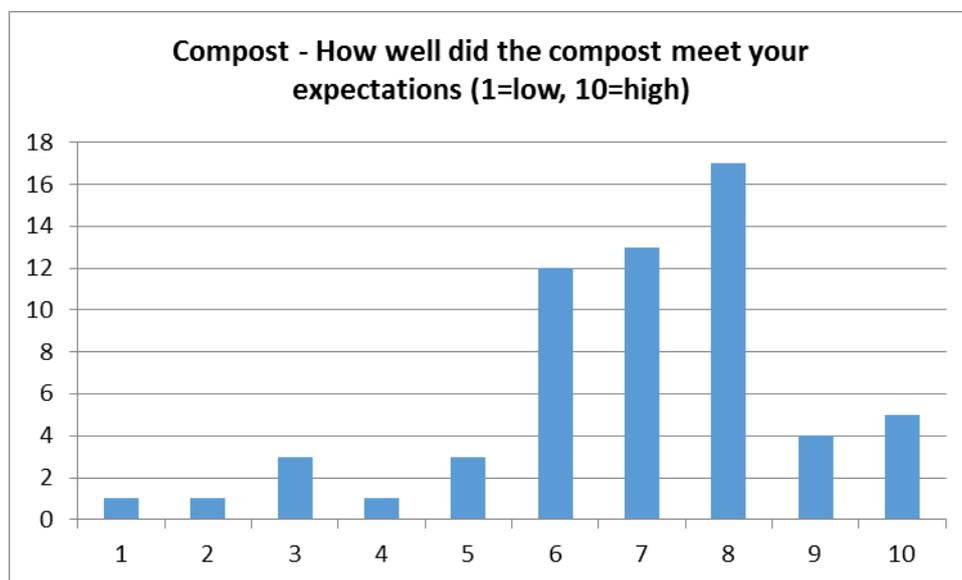
unless use is longer term, it is often hard to see the benefits within only a couple of years

unsure what waste materials are being included to produce the "compost"

Varying amounts of plastic content between suppliers

Very strong odour when delivered fresh but left in a stack the odour weakens over time.

Volume of product to transport/apply



How well did the compost meet your expectations - Feel free to explain why (free text comments):

"Cowboy" producers being allowed to get away with including unsuitable materials in the compost (printer / toner inks etc; plastics; glass; wood with paints/coatings/preservatives etc) Stench from animal byproducts in compost Environment Agency "regulation" of the "big-boy" producers pathetic/non-existent - it is only the small farmers who were taken for a ride by the waste compost producers who have been prosecuted. Spreading & incorporation damaged soil structure - not recovered 2 years on

A PAS 100 certified compost which contained plastics and sharps including large objects such as a metal knife, tin can shards and plastic plant labels was supplied by a National company to a customer of mine. Yes the invoice was cancelled but the customer has been completely put off by the quality of material supplied. I also carry out permitting work on behalf of another national company and controlling the contractor employed to deliver and spread material needs constant monitoring, to avoid non compliance. However in the main I have mainly positive feedback from clients, and most composters are getting the message to do the job well.

clear financial saving on manufactured fertiliser.

As we are a producer of PAS 100 compost and I am a FACTs registered adviser I am in complete control of quality, delivery and spreading. My only negative comment would be that we sometimes run short on supply for ourselves because local demand outstrips our supply capabilities.

better than nothing!

Bits of plastic are still a potential issue. NVZ regs are ridiculous given the low available N in compost, so you can never apply as much as you would like to provide benefits in terms of soil structure and water holding capacity.

Compost - a longer term strategy for all round soil improving.

Compost made on site in a semi invessel system which gives the farm full control of the process and inputs. The compost is produced very close to PAS100 standards but not actually registered.

compost out of the waterbeach recycling plant in cambridgeshire is an excellent consistent clean product

difficult to put a precise benefit on it as each year is different and it is a long term benefit

Few machines are available , mostly imported from the EU or USA .

Full of rubbish but the organic matter was very good

Good product but some large items of woody material e.g. pine cones and sticks. Plastic contamination and price are the main reasons I stopped using PAS 100 compost. Price - cost exceeded NPK value.

Good product if we did not have the problem with plastic.

Here (R of Ireland) I find it very difficult to get peat-free compost from retail outlets. Wholesale outlets do not meet my needs for regular small amounts.

I thought the compost was of good quality but an analysis was not provided prior to application. I could foresee problems where under pressure contractors wanted to apply the product to wet soils causing compaction problems. However, the results we have had have overall been positive. The only issue now is the big increase in soil Mg which I feel could be problematical.

it doesn't have an immediate effect, but continued use will prove beneficial.

It has been used regularly by the grower who produces it on their farm, giving enhanced vine vigour without unbalancing leaf:fruit ratio. The problem with I get trying to use compost in top fruit is the transport costs and application, particularly in cider fruit where sweeping out from under the trees is used regularly during harvest levels of plastics are low but always there

Lots of plastic and nails in one customers product

My experience of compost is positive. It's often not the product that is the issue, it's the cost of getting it to the land that benefits from the application

My farmer clients have been using compost for nine years without too many quality issues. Approx. 130,000t been spread over that period.

often compost quality was poor either because of plastics seemingly well over PAS100 standards, or compost was not very dense and well rotted with lots of large sticks and wood

plastic contamination

Plastic contamination was present. A number of farmers are not able to utilise compost because their potato buyer [named buyer removed] will not allow any contamination; the product has to be totally free of glass, plastic & metal. I suspect it is really just the plastic that is their main concern. The issue of plastic contamination is holding back a number of farmers who would really benefit from the organic matter. The compost processor just focuses on their costs and I know their gate fee is around £15/tonne.

Quality of the product not as good as described.

Quite expensive per acre spread and hard to evaluate £ value for soil improvement.

Several of my clients have been supplied compost of very poor quality. There has been a lot of rubbish and the compost has been very large particle size. Also in my experience you cannot allow for any P or K contribution from the compost and so it is merely a soil conditioner.

Slight plastic issues screened at 25 mm, 10 mm would be cleaner. Compost is probably the best soil improver over time, we've been applying it for approx 17 years, organic matter and soil structure has improved.

Some product has too much plastic although better cleaning processes have improved from some sites. I have a theory that brome problems have increased since compost has been used. I can find specific examples of farms that were clean of brome and now have a problem following compost application.

The anticipation is that there are longer term benefits which, year 3 into use, are not yet evident. The financial cost versus the nutritional benefit in year 1 is negative, as such the hope is that going forward the increase in cation exchange sites in the fields that have the applications will reduce the future requirements of P&K as well as the 'available' year 1 saving, thus over all have a positive financial effect. This is before any qualitative benefits of yield increase, improved drainage etc are taken into account.

The compost is a good source of rough partially broken down organic matter that finishes breaking down slowly and you can definitely see the benefit of it in how workable of the soil in subsequent years.

The compost quality can vary which on occasions gives higher levels of un-composted components mostly woody parts. Plastics are the main problem.

The limit in physical application rate means it will take multiple applications over many years to see any significant improvement in soil organic matter. As in other sectors of the industry there is wide variability in finished product quality.

The use of compost gives a fairly quick improvement, at least short-term, and for all-arable farms it is good to see the impact.

Too much rubbish in it. Plastics, sharps etc. Excess weed problems since using it. Used for 4 years. 2 months ago I took the decision to stop using it. We were taking about 4000t per annum

Too bulky for moving long distance from production site Good drainage of heavy soil after application. Too much plastic in compost Excellent soil improver

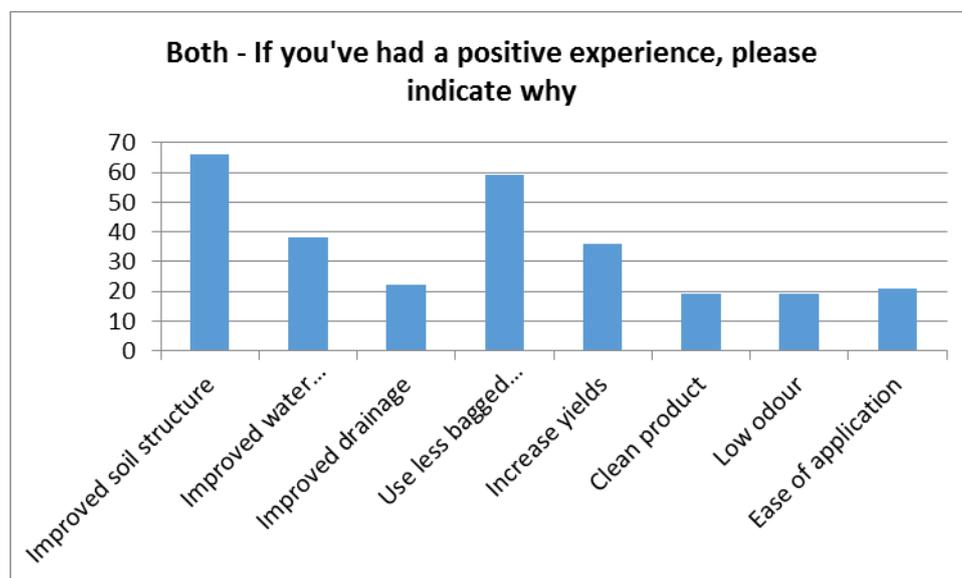
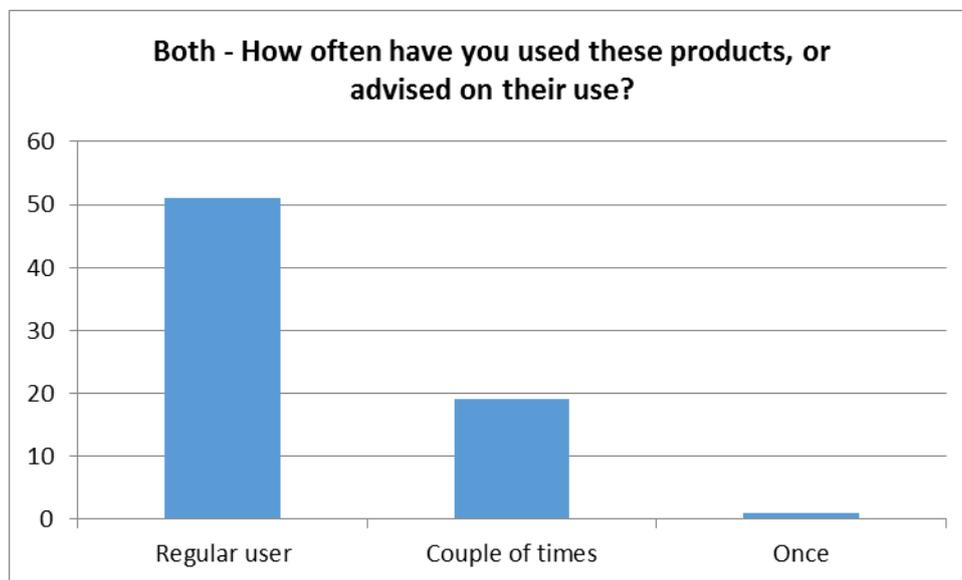
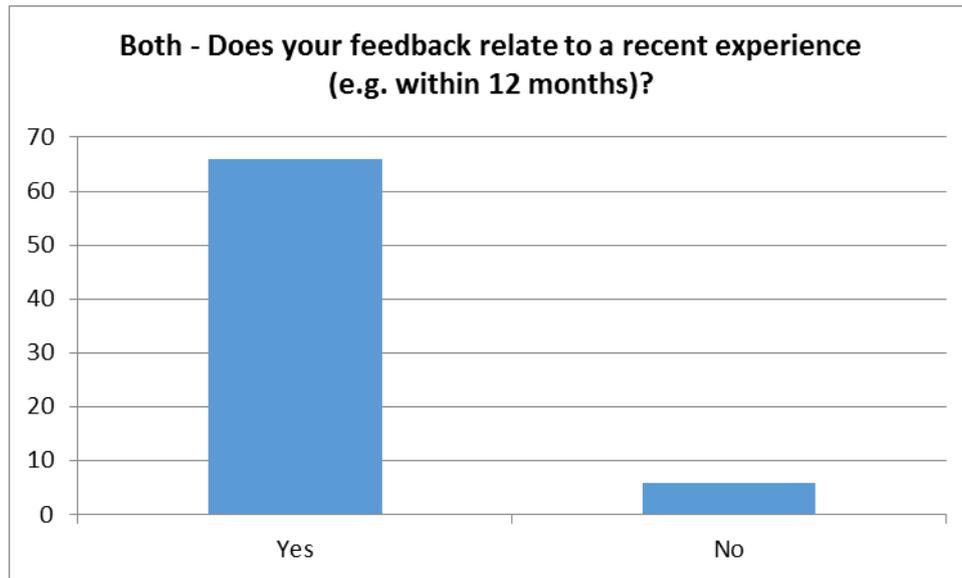
Very good source of p&k. Has improved the soil condition and reduced trace element deficiency. Can be cumbersome to spread and soil compaction can occur if spread in the wrong conditions

We are producers and users

We had no expectation! It was free. We used it as a soil conditioner to increase the organic matter. It is helping but there's a way to go. Quite uneven in quality compared to sewage sludge I have used elsewhere. Bloody plastic in it as well puts a lot of growers off

when it is free from contaminants such as metal and plastic, it is a very good product however guaranteeing the quality is difficult despite a number of screening processes

Annex 4: survey responses – both digestate & compost



Both - If you've had a positive experience, please indicate why – Other (free text comments):

Along with farmyard manure the only way to maintain soil health and vitality

Better establishment of WOSR after digestate.

Compost does not appear to deliver as much available N as the analysis might indicate

Compost feeds worms - the onward benefits of this are dramatic

Control of soil borne plant diseases and increased soil biota populations

Difficult to quantify the first three points above, but subjectively seems to improve all three.

Digestate's use as a starter fertiliser, good nitrogen and sulphur content.

I wouldn't say yields increased but same yields with reduced bagged nutrients

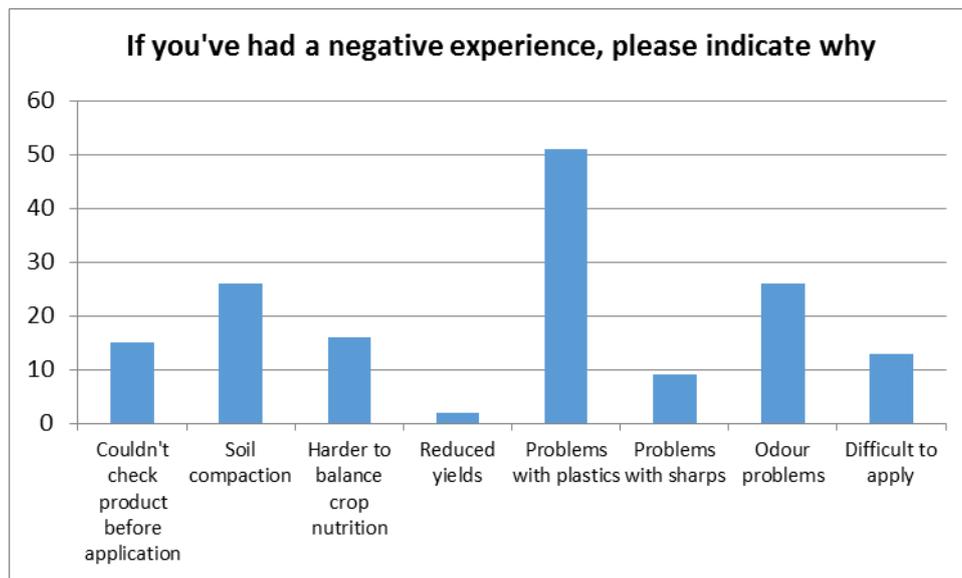
Improved baker content in early baking potatoes in 1 trial

In crop use of digestate with trailed boom application splitting tramlines has not been good - bad compaction reduced yield in wheelings - also slow uptake of product.

Odour can be a short term nuisance whilst compost being heaped. Important to inform neighbours, if appropriate, of source of smell, what it is and why it is being used.

The ticks refer to compost. This wasn't odour free. Digestate required dragging a big pipe around the field which seems too crude to be sensible

When used as part of crop nutrient supply very useful. Issues where soil P and K indices are already high and where high proportion of nutrient comes from amendment. Have seen soil structure damaged at high rates of LD.



If you've had a negative experience, please indicate why – Other (free text comments):

Compost attracted large numbers of corn fly which laid larvae on crop resulting in crop failure

Can get compaction when applied when soil damp and contractors use big machinery

could not get guidance as to which end user would accept produce from land used on waste

Delivery and storage can be an issue especially in winter, compost is bulky and light so needs a lot of space.

Digestate application method as described above.

Digestate can vary widely in nutrient content and if you are not careful some products are no better than dirty water with little value to the soil.

Digestate from food waste killed worms after application Bulk of compost makes transport and storage costly. Plastic problem sorted in Digestate now but still a problem in compost if it is not screened well. 20mm screen seems max acceptable.

Glass content of compost in a root crop rotation

GWC foreign objects can still be an issue despite PAS100. Still learning how much crop available N to allow from LD.

In general OK, some slight issue with plastic in compost but the impact of plastic tends to be an individual issue with some farmers unhappy about seeing plastic.

In the past plastic was an issue.

Liquid digestate applied to growing crop caused severe scorch to stubble turnips

Meadow grass seed contamination suspected, uneven application, field storage sometimes unstable

Most customers anxious to apply in the Autumn for practicality which makes justifying N required in the spring difficult due to nutrient loss. Customers not keen to apply in the spring when better use can be made of the benefits.

Most problems are now overcome

Odour problems usually low and short lived prior to soil incorporation of compost, and odour from digestate applied to growing crops usually low and faded by completion of application.

poor analysis provided.

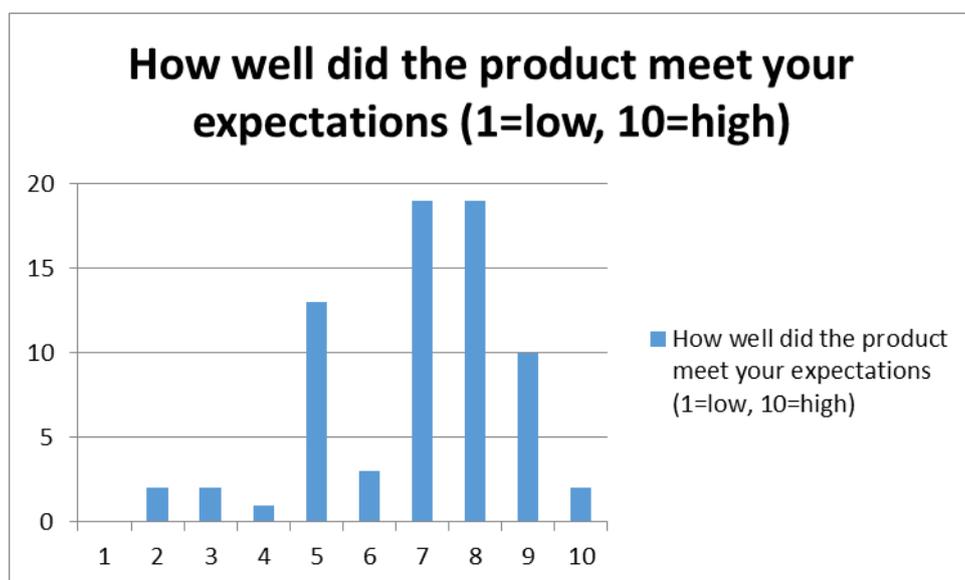
problems with Nitrogen lock up for the current crop. This was especially prevalent from Digestate applied to Grass Silage Land

The composts, reduced Winter OSR yields. Digestate didn't have this effect.

Time consuming to apply liquid fraction of AD - many trips to fill up.

Uncertain of application rates

worms



How well did the compost/digestate meet your expectations - Feel free to explain why (free text comments):

a general inconsistency of products

As above application let AD (food waste) digestate down. Compost if properly shredded/picked and sewage sludge are great products.

Benefits outweigh negatives

Compost cheap and improved soil structure. Easier to apply than digestate. Can choose application timing easier with compost. Spreading is a problem for digestate because of the need to move year round.

Compost despite bulk handling problems spread well and should give long term benefits to soil structure. Digestate -problem to get it spread evenly without causing crop damage. Farmer did not like the extra traffic wheelings in the field or on the headland. We also had complaints from non farming neighbours about traffic.

Compost from mixed sources was and is the most problematic due to the plastic problems to the extent that I will no longer recommend it. Digestate would seem the way forward but there is the still looming issue of blackgrass viability.

Compost has little benefits and nutritional not very good. Digestate can vary a lot from different sources

Compost is a great long term fertility builder but the plastic in it is becoming more of a problem, we have now switched to green waste only compost as the food waste element of it, although higher in nutrients, was bringing more plastic in. Digestate is a love hate relationship, our supplier never gave us up to date nutrient information and the product increasingly became contaminated with plastic and coupled with the logistics of getting the product to field and also the weight of the spreading tanker made me stop using it. On the flip side, it's clearly a very N available product and has benefits beyond straight N, although I don't believe it increases OM levels.

Compost is very beneficial to growers only if the prices are kept competitive, with the grain prices at an all time low it is very difficult to justify using the material. Digestate, Again a very good product however timings and application rates are making growers question if the material is beneficial, there is also a lot of heavy machinery on the land causing compaction.

Compost less satisfactory at delivering nutrients than digestate, based on crop appearance and end yield.

contamination main problem with composts. Odour from digestate. Timing and quantities with digestate. Accurate analysis of both.(actual rather than generic)

Cost effective enough to outweigh the negatives

digestate fine. compost the plastics have been a pain

Digestate is a good source of nutrient. Compost has far too much plastic.

digestate seems to be a clean and homogenous product but the compost varies greatly. compost almost always has too much plastic and sharps in it unless graded at 30mm. we have decided to stop using compost now until the operator goes back to a 30mm or less screen and increases the air to blow away plastics.

Does what it says on the tin - organic waste

Excellent source of readily available nutrients (digestate) Good at building OM levels on light land (compost)

Generally the product was delivered and spread in a professional manner with little or no issues. The quality was good with informative data providing good agronomic guidance and advice to be able to reduce mineral fertiliser use.

Green waste compost definitely improved the following crops, not cheap due to amount of bulk to transport and apply but positive long term benefits to the soil. Digestate less confident of quality and consistency of products available, some odour issues with some products.

Heavy machinery working on wet soils and not fitting the tramlines is the biggest issue. Applied in good conditions results are excellent. Timing digestate delivery and application can be tricky because the contractors are stuck with tight schedules.

I thought both products would be more useful and a soil conditioner than a fertilizer. I think we have seen an improvement in soil structure and organic matter. However so far I am not encouraged to use them to replace bagged N

Improvement of the soil moisture holding capacity on very light soils but plastic returned on surface for a long time before debris went away!

issues with both compost and digestate claiming to be PAS quality but increased levels of contamination within the product. Nearly impossible to check the contamination of digestate prior to application, bad feedback and lack of storage and planning restrictions to remove digestate from production facilities then putting pressure on end users to apply at the wrong timings of application and use of inadequate off site storage options. Compost quality varies between sites including contamination with screen size etc.

Mainly used for improvement in soil structure & general improvement in background nutrition Main problem with compost is plastics.

Over a few years, the clients soil structure improved. The P and K in the crops throughout the growing season also had improved figures from tissue samples. The detailed soil indices also greatly improved. As a result of this we have had to apply less bagged P and K.

Quality of compost not great lots of plastic and sticks. Also problem with one customer nasty weed called Nova Scotia Sunspurge, 50 times worse than ragwort, ended up with this on grassland where compost was

Refer to question 4

Soil structure is improved along with water holding capacity, more efficient use of major nutrients and a good supply of micro-nutrients. Essential for farmers with no farmyard manures available who want to increase their yields whilst improving their soils.

solid was fine, but liquid as above, and also crop loss due to huge machines running in crop

Spreading issues and 'impurities' a bit of a concern and difficult to assess after only 1 year.

The AD digestate in my experience has been low in phosphate and high in potash which is good for the soil types in my area. It is necessary to keep up to date analysis of the products as they can vary.

The physical benefits are unquestioned, but it is bulky and difficult to apply in the wet, plus compost adds another harvest task that further pressurise a tight work window

The products are more difficult to plan and apply than bagged nutrients but the price reflects this. Compost has had more problems with odour than digestate.

These are long term products, and compost benefits may take a few more years yet to show. My part of the world had a bad harvest this summer due to frosts at wheat flowering, rain at pollination, and bydv infection during the winter when the land was unapproachable for 4 months and the aphid vectors could not be controlled. Compost and digestate benefits were masked

Used correctly, have seen marked improvement in soil organic matter, soil structure, consistent yield improvements and increases in earth worm populations. These comments would also apply to use of manures from livestock enterprises. Marked reduction in use of manufactured NPKs.

Useful contribution to crop nutrition and as soil amendment. Few issues with application of digestate and consistency of product analysis making topping up a challenge.

Variable quality and uneven application

When clients are advised that the products are produced from waste they can weigh up the benefits versus the dis-benefits (physical contaminants) normally realise the benefits in using off-farm organic matter to improve soil fertility.