

FACING UP TO THE PHOSPHORUS CHALLENGE



The loss of phosphorus in exported products is a concern for all organic producers. The **Improve-P team** have been assessing attitudes to alternative phosphorus fertilisers

The issue of how to meet P needs in organic farming and wider society has been a hot topic for discussion in the UK ever since the publication of the Soil Association's landmark report on peak phosphorus in 2010. The level of interest in other European countries varies. Danish farmers have been hotly debating the sustainability of relying on conventional manures in organic farming, while Swiss farmers are not concerned about relying on greenwaste compost and conventional manures to meet their crops' P needs. Regardless of the level of local concern, most organic farmers would agree that P removed from their farm in exported products needs to be replaced in some way.

Alternative P fertilisers

Many organic farmers address P imbalances on their farm by using alternative P fertilisers (APFs); fertilisers imported from outside the farm. Rock P is a common APF, but it may be only slowly available to the growing crop. New waste products such as digestates are increasingly available from bioenergy systems. These APFs have potential for recycling to agricultural land. Improvements in technology for sorting and handling waste means that the quality of residues suited for fertilisation and soil amendment has improved. On the other hand, new chemical compounds are constantly entering the food chain, making it a challenge to monitor and ensure safe levels of concentration of all

relevant compounds in these new fertiliser products.

Improve-P

Improve-P is funded by six European countries under the CORE Organic II-program. It seeks to address many of these issues by highlighting the need for additional P in organic farming systems, reviewing the best sources of APFs, and recording stakeholder opinions on a range of potential APFs. The project is holding workshops in all partner countries (UK, Austria, Denmark, Germany, Norway and Switzerland) to map stakeholder opinions and assess how attitudes towards APFs vary within each country and among partner countries.

UK workshop

Some readers may have participated in the UK workshop held during the 2014 National Soil Symposium in Solihull. Hosted by Newcastle University and Bioforsk Organic Food and Farming (Norway), 'Facing Up to the P Challenge' included presentations with examples of P depletion in long-term organic farming systems, possible ways to improve P efficiency, such as deep-rooting crops and efficient cultivars, and characteristics of some relevant APFs. Participants were particularly interested in the figures presented on heavy metal levels in some currently permitted APFs. One respondent commented that they were 'impressed by lower levels of heavy metals per kg P in some currently banned sources of P'. The participants had the opportunity to discuss difficult questions about APFs and were asked to complete detailed questionnaires. A total of 58 questionnaires were completed and have provided a valuable window into the perceptions and attitudes of a range of stakeholders in the UK towards APFs.

What did you tell us?

The participants were asked their opinions on the acceptability of different kinds of APFs in organic farming. APFs were grouped into conventional animal manure, urban waste products, products originating from human waste, and other APFs including currently permitted products and some prohibited APFs. Most felt that all kinds of conventional manure were acceptable for use in organic systems, with the exception of manure from fur animals. UK respondents were much more open to using conventional manure than respondents to a similar survey conducted

at the Organic World Congress in Istanbul in October 2014. There the average acceptability across all conventional manure types was 59 per cent, compared with 70 per cent in the UK.

Acceptability for most kinds of urban waste products was also high, with even the least acceptable source (food waste from animal products) still considered acceptable by more than 70 per cent of respondents. Of most interest were attitudes towards human waste products, which are very contentious within the organic community, especially in Europe. However, UK stakeholders appear to be very open-minded about their use. Figure 1 shows that about 80 per cent of the respondents felt that human urine was

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acceptable. Wastewater precipitates like Crystal Green were also acceptable to about 75 per cent of respondents, and biosolids, which are widely used in the conventional sector, were acceptable to 71 per cent of respondents. Ash from the incineration of sewage sludge was less acceptable at 50 per cent.

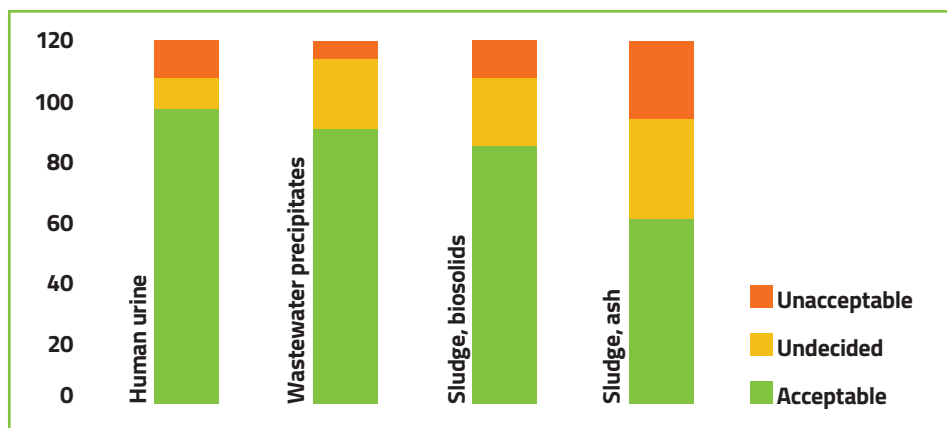
Surprisingly, less than half of respondents considered rock P or basic slag, both currently allowable APFs, as acceptable choices for APFs. This may have been a reaction to the information presented on heavy metal contents in rock P and basic slag, which were both significantly higher per kg P than many prohibited sources of P.

Participants also provided some insightful responses to some tricky

questions. When asked whether recycling nutrients is more important than ensuring a completely contaminant-free final product, opinions were divided – 17 per cent fully disagreed with this statement but 19 per cent fully agreed. While 48 per cent of respondents did not think that permitting more recycled fertilisers in organic systems would damage the reputation of organic food, 30 per cent did think it would be damaging. The majority of respondents recognised the importance of livestock in organic systems with 62 per cent agreeing with the statement 'we need animals in organic systems to reduce the need for imported P fertilisers'.

The general feeling from the workshop was one of openness towards APFs,

especially materials recycled from society. Respondents commented that they were 'pleased that alternative sources are being investigated', that the sector should 'support the development of new technologies to recover P and K from all waste', and that 'we must encourage use of P from recycled sources whenever possible.' The last word should go to one respondent who summed up the workshop in this way: 'Ultimately for sustainability we have to replace P, lost off farm but balance between purity and recycling is a difficult one. We need to focus on making best use of P reserves in soil, for example deep-rooting green manures, efficient composting, P scavenging plants, that is, getting more P into the organic fraction and sourcing less contaminated sources of P.' 



Acceptability of human waste products by organic stakeholders in the UK (Solihull IMPROVE-P workshop, November 2014)

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FIND OUT MORE

► *A Rock and a Hard Place: Peak Phosphorus and the threat to our food security*, Soil Association 2010. Read the report at www.soilassociation.org/innovativefarming/policyresearch/resourcedepletion