

Proc. 432: Speciality Mineral and Organo-Mineral Fertilisers - Products and Markets

by Arnie Rainbow.

Discussion following presentation of the Paper:

Stephan Vermeulen, *Kemira Agro OY, Espoo, Finland*

You mentioned one product which was the waste from slaughterhouses in the UK. After the BSE affair how many farmers are willing to take any waste from these slaughterhouses, or more generally what do you say about the microbiological purity of this waste?

Arnie Rainbow:

The actual example I showed was not from material produced in UK slaughterhouses but was from another European country. I understand your question. We are looking into the problems involved in being able to certify that such a product is completely safe. As we understand it at the moment the method of hydrolysis which involves using a very low pH and then a very high pH, thus a method of acid and alkaline hydrolysis, is believed by the European authorities to be safe and to actually be able to kill any microbes and even viruses. However I think it will take a long time before the ordinary consumer can accept such an argument. From the scientific standpoint it looks as though it is a very good method but I think that the real problems will be emotional rather than scientific.

Geraid Demets, *Kemira SA, Wavre, Belgium*

You mentioned the increasing demand for organic food, or let's say 'green' food, and as a consequence you indicated the need to recycle a number of nutrients. However one of the issues with these nutrients is that most of the time you cannot really get traceability nor analysis per batch produced, for example with this blood that you recycle or manure. How would you propose to overcome this?

Arnie Rainbow:

I think there are some major issues to be tackled here. The agricultural industry has been used to enjoying the benefits of fertiliser regulations and guarantees them good fertiliser quality. It's going to take some time to demonstrate the same type of reproducible quality with some of these organic materials. I believe that there are a number of organic materials which are capable of being converted into good quality products but obviously they will never be as high in nutrient content as synthetic sources and therefore the handling costs and the application costs will always be somewhat higher. You will have to use more manpower, you will have to use more diesel and it is less convenient. But if the grower can get a premium for producing an organic crop then I think it will happen. In the UK it's five or six big retail companies that really dictate what happens in food production.

Roger Dyson, *Kemira Agro UK Ltd, Ince, UK:*

With regard to the ash from the burnt chicken litter, it is my understanding that although the material contains high levels of P and K, not all of this P and K is available to the plant. Is that correct?

Arnie Rainbow:

That's not my understanding, from what I know of the material. The potassium is fairly rapidly soluble. The phosphate, although it is slowly soluble, eventually becomes available. I don't have it with me but I can remember seeing analytical data based on extractions using neutral-ammonium citrate and citric acid and from what I can recall the phosphorus was actually quite efficient in the long run, and I think it could be compared quite well with, say, dicalcium phosphate or ground rock phosphate.

Avi Shaviv, *Technion IIT, Israel.*

I would like to add a comment concerning chicken litter. I think the use of poultry litter (untreated) has become a big problem in many countries where they have acidic soils and the phosphorus became too available. In many places where they have used the poultry manure heavily for ten, twenty, thirty years they have a situation where they have optimal or excess phosphorus in the soil. Calculations have been made in several states in the US and in Europe that they probably could avoid fertilising with phosphorus for the next 15 to 20 years. This is due to the fact that the poultry litter is very rich in P, much more than most other materials due to the addition of DCP in the diet, and then that the organic molecules in the poultry litter increased the availability of phosphorus. It's going to be one of the big problems in term of eutrofication of water due to heavy use of poultry or any kind of animal manure which has a relatively high amount of P.

Jim Lewis, *Hydro Agri (UK) Ltd, Immingham, UK:*

I have just a couple of comments which extend this discussion. The Soil Association and other bodies responsible for regulating organic farming have a great number of restrictions on the type of inputs that can be used for organic farming. The type of composts you are talking about are produced from so-called 'processed inputs' so therefore there would be a restriction on those inputs for use in organic farming. Secondly, concerning the burning of bio-fuels such as chicken litter in power generating stations. There is an environmental cost for moving all this material around and also for storing it near the power stations. This has caused an outcry in the UK and I suspect it will get louder as it goes around Europe. I think there will be a restriction on the quantity of these materials that can be used. What's your comment on that?

Arnie Rainbow:

I agree with much of what you've said. The power stations are being built in areas where there is a high concentration of poultry meat production, that's the first thing. So they are obviously trying to minimise the fossil fuel requirement

to get the material to the power station. I don't have any particular interest in this company by the way, and neither do I work for them. But they seem to be able to phase their intake of the poultry litter quite efficiently so it's not actually being stored outside the power station. When delivered it's bought inside where they have negative relative air pressure, which helps to keep all the offensive odours in, and then the foul air is sucked in through the furnace so that it burns off any smells. They had to satisfy a large number of environmental questions; you can imagine what the local people felt when they heard that there might be this power station burning poultry litter on their doorstep! They had one or two initial difficulties, particularly at the first one they built at Eye in Suffolk, but they seem to have gradually learnt by experience as this whole issue of moving materials around is quite complex. There are pluses and minuses to the system of course. You burn off the nitrogen, the burn off the organic matter - on the other hand you concentrate all the other nutrients so that it's then more cost effective to apply the ash as a source of P and K, sulphur, etc. There was a problem, certainly in certain areas with huge heaps of poultry manure sitting outside in the rain and with the nitrogen-rich leachate maybe running into ditches! So it probably causes some extra problems as it solves some others. One of the groups of people in the UK that don't like it are the mushroom growers because they have been used to getting all their poultry manure free of charge. Now they are burning half of the chicken broiler litter in the UK and the mushroom producers are quite fed-up, as you can imagine!

Jim Lewis, Hydro Agri (UK) Ltd, Immingham, UK:

Chickens are produced using grain which has been grown using manufactured fertilisers, and for example municipal waste will be from gardens which have used agro-chemicals. What do you think about the principle of using these 'processed inputs' in order to produce so-called 'green compost' for use in organic farming? Will that satisfy the Soil Association organic growers?

Arnie Rainbow:

I'm not an expert on Soil Association rules but I have read them and from what I can remember they are happy for growers to use composted, garden residues and food residues, etc. I think they are convinced that good composting actually breaks down agro-chemicals quite efficiently. That has apparently been demonstrated. But there are some other rules which cause real problems, and some which are quite illogical in my view. For example you can only use poultry manure from a poultry farm which has a sufficiently low density of stocking. You can't use battery hen litter because they describe it as an unethical system of animal husbandry, so that's completely out. You can't use manure from an intensive broiler unit, so their values if you like, are not just based on science - in fact I think they are hardly based on science at all!

The Chairman thanked the speaker for the paper and the discussion.