FISH WASTE CAN TRANSFORM OUR FARM ENVIRONMENT

Fish fertiliser could be a billion dollar industry says an industry leader. Paul Elenio reports

In a province of Crusaders there is one man leading a righteous crusade that seems almost too good to be true.

Kypros Kotzikas is a man on a mission to replace as much chemical-laden fertiliser as possible with an organic hydrolised fish fertiliser derived from fish offal.

In a country where concern is mounting over pollution of both pastoral soil and waterways the fact that someone is leading the way with an effective organic alternative should be welcomed with open arms.

Not so. Kypros' United Fisheries in Christchurch is producing the Bio Marinus fertiliser and selling to a number of farmers and horticulturalists who swear by the results – but that's only the tip of the rural iceberg.

Kypros' crusade is based on his firm belief that we cannot carry on damaging our land and water with chemicals which, in one way or another, find their way into the food chain.

He is driven by the ongoing tide of people struck down with various cancers and wonders to what extent man has had a hand in such diseases. His second wife died of cancer three years ago so it is, to an extent, a personal mission as well as one that just seems to make a lot of sense for the wellbeing of the country.

Growing up on a Mediterranean island in the 1940s Kypros says people were healthier and wonders what's changed.

"The chemicals we put in the soil are killing us, and the quality of the underground water in some parts of the country is deteriorating" Kypros said.

He produces an information sheet from Environment Canterbury which shows huge swathes of the South Island that have been tagged with water quality status of "unacceptable" (22 percent) and "at risk" (46 percent). EC's list of helpful actions that can be taken is headed by "following better practices on-farm".

Kypros wants to leave a legacy of lush grass bolstered by fish fertiliser and stock that is fed with something that is natural. But he has not had a lot of traction in government and with other key decision makers nor a lot of support from the environmental lobby.

The fertiliser ticks all the right boxes: it reduces gas emissions, it's cost effective, increases milk solids, improves the quality of grass, improves animal health and there are fewer effects in the event of drought.

An organic liquid fish fertiliser also leads to a better quality milk but that doesn't seem to attract much attention because dairy farmers are paid on the milk solids and the diary companies aren't looking for any of the other benefits the fish fertiliser adds to the product.

Kypros met with dairy company Synlait but, like others, their demand was for scientific evidence. "In their shoes I would be asking the same questions," says Kypros.

In the meantime United is working with officials in New Caledonia and are just about ready to supply them with the equipment they need to start producing their own liquid fish fertiliser. They are looking for ways to dispose of their own offal and want to turn a problem into a positive and make money from the resultant product. Kypros hopes that one day there will be similar factories in all the major Pacific islands.

In addition, a Russian company from Sakhalin, an island that produces approximately 600,000 tonnes of sea-run salmon a year, is also keen to buy United's technology to do something with their waste.

There has been interest in the product from China and the first two containers of fertiliser are about to be shipped.

Kypros says it's not about United Fisheries and their Bio Marinus product – the capacity to use the byproduct of fish needs to be a national effort. New Zealand, as a nation, catches over 1 million tonnes of fish per year generating approximately 600,000 tonnes of waste, the

Biotechnologist Smitha James with the United Fisheries fertiliser tanks at the rear of the Christchurch factory.

majority of which goes into the energy hungry production of fish meal.

At a time when the Government has set some ambitious targets for the seafood industry Kypros says the fertiliser is potentially an industry worth $1.2 to $1.5 billion a year.

Add in the value of potential sales of fish bone, one of the few calcium products readily absorbable by both humans and animal due to the perfect ratio of calcium and phosphorous (which is approximately 2:1) naturally occurring in fish bone and also the high percentage of collagen in the fish bone which is good for the skin, nails, hair and joint cartilage.

Kypros walks the talk – he doses on the fish bone powder that helps him to walk for an hour each day. Before he started on the fish bone he was having trouble with his hips; but he is now pain free.

Of course using seafood as a fertiliser is not new. When the whitebait were running at enormous numbers in the 1950s the fishers would use them to nourish their gardens.

Kypros reckons his fish fertiliser is the best in the world.

For six years he has employed bio-technologist Smitha James to work only on this issue, and the three targets they had to (and did) achieve in order for the product to be accepted were:

- No smell
- Stays emulsified
- No nozzle blockage

At the rear of the huge factory in Christchurch Smitha's office overlooks enormous floor to ceiling tanks containing the fertiliser in its various stages of preparation.

From the front end processing factory where fillets are separated from head, guts and frame the offal is channeled through a screw conveyor to one of three 10,000 litre double skinned digestor tanks where it is heated to 65°C and the offal hydraulised using enzymes.

It then sits overnight before being filtered through a 200 microns screen (to remove particles that might block hoses or sprayers) into a mixing tank for final processing, before being cooled to 20°C and decanted into containers for shipment to dairy farmers, grape growers and others.

Sales to South Island customers have been largely through word of mouth. The anecdotal

"We cannot carry on damaging our land and water with chemicals."

Workers monitor the last stages of the process of turning fish waste into fertiliser sold to farmers and horticulturalists.

feedback that sales manager Pete Kerdemelidis gets is positive.

"The feedback we receive from farmers helps us to understand the many positive effects of our fertiliser, as well as some unexpected benefits. It doesn't just do one thing, Bio Marinus has a myriad of uses".

"One West Coast dairy farmer tells us his cattle show no signs of bloat and staggers, have fewer hollow calvers and easier births. Another tells us she has 'more worms in the soil and the worst paddock is now the best after applying Bio Marinus. It seems to condition the soil as well as fertilising it".

A Rakaia farmer noticed that the cows preferred the grass with Bio Marinus, and that it grew more than untreated areas when the dry hit and the water races were turned off for a month. "It's so easy to apply through pivots with an injector".

In North Canterbury a farmer wrote of increased milk production and reduced costs. "I'm not sure how it works, but it works – you can tell where we have applied it and where we missed".

Pete says horticulturists and grape growers also see the benefits.

"We run our farm organically and Bio Marinus Organic is our main product of choice. It feeds the plants, soil and has no residue," a grower said.

One of just two staff dedicated to spreading the word, Pete was using fish fertiliser growing grapes in central Otago with very good results long before United started their production.

"It improves the flavour, it enhances the smell of flowers. It makes the plants more resistant to diseases."

Yet despite his experience he finds it still takes many visits to persuade a farmer to try it. Some farmers are just not prepared to make the change, fearing they are taking an unaffordable risk in using the fertiliser.

He says that people in the horticulture industry know that they have to be more responsible and change their practices.

But the politicians "don't get it", Kypros says. He has tried to entice various Ministers down to have a look.

Kypros is grateful for the financial support he has had from Seafood Innovations for research into the liquid fish silage, but would like to see the government contribute and lead the way with funding of research into the fertiliser.

Two years of trials by Land Research Services at Lincoln University have shown that United's liquid fish fertiliser can grow just as much grass, if not more, than traditional chemical based fertilisers.

Their trial results reported that the fish fertiliser produced healthier plants and animals, improved effective topsoil, allowing deeper root penetration, improved soil moisture capacity to reduce irrigation and save water and increased nitrogen use efficiency, resulting in less nitrate leaching and reduced environmental impact.

Some farmers are just not prepared to make the change.

The dry extract once the fine mesh screen has done its job of separating solids from liquid.

Kypros declares that vegetables and fruits are healthier, tastier and have a greater resistance to disease. Crops have higher density and nutrition.

"After using our fertiliser myself on my farm, I have first hand experience that the grass grows better, the fruit and vegetables taste better, and the smell from the roses is incredible" Kypros said.

He is passionate about what he preaches.

"There is more value in the fish byproducts than the fish products themselves."

He acknowledges there needs to be more education and marketing and that it will take time. But his sense of frustration at the slowness is palpable.

"It is difficult to convert people and change their habits," he said.

"There is more value in the fish byproducts than the fish products themselves."