began to see the crust which had formed break up, and the level of sediment slowly decreased."

While the additive could have been added straight into the lagoon, this would not have been the most cost-effective way of solving the problem, says Giles Dadd, agricultural consultant with Epizym. "To use the amount of additive needed to break down the lagoon contents would have been expensive. But using the additive in the slurry tanks means it has time to multiply before it reaches the lagoons, making its use much more efficient. On top of that, slurry has a greater usable nitrogen content which crops can make best use of."

"Slurry is applied to wheat at a rate of four acre inches, or about 100 units/acre," says Mr Gray, adding that all slurry is applied at night to avoid scorch problems, which he reckons can knock growth by a day or so when slurry is applied incorrectly. "Also, any odour problems are reduced, as ground temperatures are lower."

Treated slurry is also easier for plants to absorb, as it works down into the soil quicker as a result of the enzymes breaking down the long-chain solids, says Mr Dadd. "First, there is less solid matter clinging to leaves, which means plants can absorb sunlight more easily. And second, it flows into the soil easier, so plants gain the benefit quicker."

Increased slurry use on crops also helps from an environmental point of view, says Mr Gray. "Applying slurry to growing crops means it is used more effectively, so there is less chance of leaching and hence environmental problems. Also our winter-sown crops are strong enough in spring to make best use of it, saving significantly on fertiliser costs."

SLURRY ADDITIVE SAVINGS

Saving on bought-in fertiliser	£6,000
Contractor costs	£1,500
Going all-slurry – 18,000 pigs @ £6	£108,000
Less cost of Epizym Pigs	-£2,800
Total	£112,700

But while all slurry sampling has indicated that an average application of slurry is yielding about 100 units/acre of nitrogen, experience suggests it is actually giving more, he reckons. "In many cases it seems we are getting the benefit of more than 140 units/acre and while soil reserves account for part of this, slurry must be making up the rest."

This saving on bought-in fertiliser is making a significant difference to the farm's bottom line, with estimated savings of about £42/ha (£17/acre) on bagged nitrogen alone, totalling £8500 for the 202ha (500-acre) arable unit. "In addition, I save the £1500 I would need to put by annually for contractors to come every five years to dredge out the accumulated sludge. Going all-slurry in my new fattening sheds is adding to the savings by way of about £6 a pig in straw and other costs," he says.

These other savings come from reducing labour need in the pig unit from eliminating straw handling and use, chopping much of the previously baled straw back into the soil, and reduced machinery costs by lowering telehandler use, this alone is saving about £8000 a year in purchase, maintenance and depreciation costs. "These savings, coupled with the fertiliser savings, mean we are more than £110,000 a year better off even after we take the cost of the additive into consideration," he adds.

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SLURRY BENEFITS

* Reduced crusting
* Fewer fly problems
* Lower odour levels
* Increased N availability

Using slurry additives in the farm's lagoons would be uneconomic. But allowing bacteria numbers to build up in slurry tanks first ensures lagoons receive a decent dose.