

Managing manures and mitigating ammonia emissions



Andrew Hockridge of High Park Farm is a dairy farmer who has 240 milking cows, and 250 young stock. He farms 430 acres near Bideford, North Devon some of which is in a Nitrate Vulnerable Zone (NVZ). In one year Andrews cows produce around 750,000 gallons of slurry that needs managing. That amount of slurry can be costly to store but as it is a valuable resource, Andrew needs to ensure he makes the most of out of it.

The slurry lagoon under the cubicles

A few years ago Andrews farm became a designated [NVZ](#), at that time the farms slurry system was inadequate and needed an upgrade. Andrew researched the different [slurry storage](#) systems available to him and decided to build a slatted shed. He explained “It was an expensive option but it just made sense.”

The slatted shed (150ft by 130ft) was built over two large slurry tanks that combined can hold 1,000,000 gallons. Above the lagoons are 4 aisles of concrete slats with a 1 inch gap between each slat, the middle section is a feeding passage and either side of the shed are two rows of cubicles between the outer aisles.

In the roof the sky lights are purposely positioned to let the sun in to warm the cubicles and not the slats. The slatted shed and lagoon took six months to build and were completed in the summer of 2010.

The cows are housed in the winter and grazed throughout the summer but come in every night. They are bedded on Gypsum mixed with

sawdust. They cannot be bedded on sand as this would settle in the bottom of the slurry tanks and be very difficult to get out. The lagoons are 3m deep so instead of trying to suck the slurry out, Andrew pumps out the slurry, into the tankers using a PTO driven pump, a job that only takes 5 minutes. Andrew warned “You have to watch out for wet pockets, the slurry does need stirring. The slats can be lifted as they are so it isn’t too much of a problem but if I were to build it again I would put more mixing points in.”

Improved animal health

There are many environmental and cost benefits of covering a slurry store. These include rain water no longer getting into the store, reducing ammonia emissions and odour, the shed requiring minimal scraping out with a tractor unlike a conventional cowshed and the reduction in time, fuel and labour, but the unique advantage of this system is the improvement to the animal’s foot health. Andrew has not seen a single case of digital dermatitis since he started using the slatted shed.

The slatted shed above the slurry lagoon



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farmer profile

Left: The trailing shoe Right: The slurry being applied to the soils surface



The trailing shoe and surface broadcasting

Following on from a [Soils for Profit](#) visit in 2010 Andrew applied for and received a SWARM Small Capital Grant to help him buy a trailing shoe (picture). The trailing shoe slides over the soil surface, parts the grass and deposits slurry directly onto the bare soil (picture).

One of the advantages to the trailing shoe machine that Andrew purchased was the way that the “shoes” were set up. The “shoes” which allow the slurry to be deposited on the bare soil and not on the grass or growing crop are individual metal units rather than being paired, which allows for slurry to be spread on taller crops and more dense swards.

Another benefit to using the trailing shoe is the reduction in odour when spreading, and research has shown that when using a trailing shoe on soil covered by crops ammonia emissions are reduced by 57% in comparison with using a splash plate (Click [here](#) to read the report).

The fields around High Park Farm are too stony for slurry injection. *“The trailing shoe is a much better method of slurry spreading than something like a splash plate as the window of opportunity for spreading is much bigger. It can be used in windy conditions and the tractor doesn’t get covered. There is minimal*

contamination of the grass and it is only one week until it can be grazed again.”

The [slurry application rates](#) can be altered but the only limitation is the thickness of the slurry. Andrew tests the slurry in the lagoon using a hydrometer. Different companies recommend different ranges of slurry DM (dry matter) content so this is something that should be checked with the manufacturer.

The NC 3000 tanker also has a 20 inch sliding axle between the wheels so it can be towed by a smaller tractor. This particular model cost Andrew £30,000 but he soon made this back as he saved this on bagged fertiliser.

Andrews complete slurry system from collection to storage to spreading minimises his nitrogen losses and thus maximises the amount of nitrogen that is available to his crops. In the first year of having the slatted shed over the slurry lagoon and the trailing shoe Andrew not only saw improved animal health but he also saw a 1000 litre increase in his cow milk yields in that first year. Andrew revealed *“This could be due to many reasons but the slatted shed definitely helped.”*

To read more about tips on how to make the most out of your manure visit the [Think Manures](#) section of the SWARM Hub.