Workshop: Slurry Storage and handling – how best to invest

Moderator: Patrick Gowing, Dairy KT and Nigel Kennington Teagasc Kilkenny

Pat Tuohy, Teagasc Moorepark

William Burchill, University College Cork

The value of slurry is dictated by its nutrient content and how we utilise this slurry on farms. Maximising the nutrient value available of slurry has never been more important due to the increasing cost of fertiliser. Maximising slurry nutrient use efficiency will also help to maintain grass production levels in the face of regulatory reduction in chemical fertilizer application limits. Sub-optimal management of slurry also represents a significant treat to water quality. We must ensure that application timings, locations and rates are optimised by considering storage capacity, management strategies, nutrient use efficiency and identify other opportunities to add value to slurry.

This workshop will address a number of questions including:

1. Can we provide a framework for achieving better outcomes regarding slurry management?
2. Current costs of slurry storage? Does investing in storage pay?
3. Can we use new technologies to get more Nitrogen, Phosphorus and Potassium from slurry?
4. What can a slurry test tell us?

As we face into further reductions in chemical nitrogen allowances due to environmental regulation the value of our slurry increases. In the past slurry has always been compared to the cost of chemical fertilizer. However going forward we need to look at the value of our slurry and its ability to grow grass in the absence of Chemical fertilizer. In the past if we didn't get the maximum value from our slurry by spreading at the wrong time or weather conditions we could supplement our grass growth by top dressing with chemical Nitrogen. This also potentially created water quality issues based on spreading at the right time.

With this in mind we need to examine the cost additional slurry storage with the value of nutrients in it to grow grass rather than being compliant.

	Details	Unit Cost	For 200 cows/20 weeks
Slatted Tank	9 foot deep, 16 foot wide	≈ €450/foot length	€ 790/cow
Overground Tower	+Cover, reception tank, agitator		€ 835/cow
Slurry Bags	Dilute slurry (< 4% DM)		€ 325/cow

If we look at the cost of additional slurry storage the upfront capital cost is ~ €800 per cow excluding VAT and any potential grant. While this is a significant cost if we average the cost over a 20 year lifespan of the tank it will cost €20/year.

If we now look at the value of the slurry by spreading it at the correct time to grow grass.

Slurry produced over 20 weeks gals/cow	(N,P,K) Value of slurry Spread during optimal conditions. €/cow	(N,P,K) Value of slurry Spread during poor conditions. €/cow	Difference €/cow
1,452 gals	€64	€21	€43

As we can see by spreading the slurry at optimal times it is worth an additional €43/cow by using the nutrients to grow grass. This will have a knock on effect of improved water quality while maintaining grass growth.

Some farmers are also exploring the option of adding value to their slurry by adding additives. There are 2 main types of additives, inoculants that add bacteria to the tank and also acids. The inoculants on trial work have been shown to add no value to the nutrient content of the slurry and should not be used. Increasing the Ph through the addition of acids has potential and is used in countries like Denmark however it requires a lot of capital investment to ensure adequate mixing and we are not in a position in this country to recommend it yet.

Other farmers are looking at the potential of drying their slurry by using a screw press. This separates the liquid portion which is high in Nitrogen back to the tank and the solid portion which is high in P into a dungsted. While there are benefits in drying if moving the material over long distances and then potentially help balance nutrients across the farm it needs to spread carefully and matched to soil samples as you are spreading nutrient dense materials.

Before looking into investing in adding value on slurry storage we should first test the value of slurry we have. There can be a massive variance in nutrient content across tanks. Knowing the value of our own slurry and spreading accordingly could be the best investment prior to looking for alternatives.

Conclusion

- Spreading of slurry at the appropriate time can save you €43/cow compared to spreading it in unfavourable conditions
- Additional slurry storage is essential to achieve this.
- Slurry storage for 20 weeks costs ~ €800/cow ex VAT
- Slurry additives have limited role in Ireland
- Screw presses have a role especially in transporting long distances
- Start with a slurry test. Know the value of your own slurry