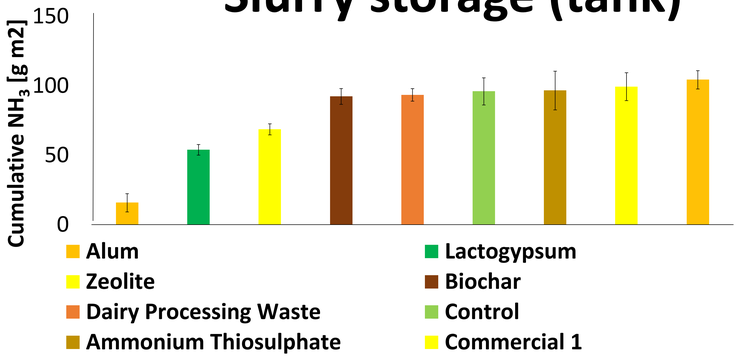
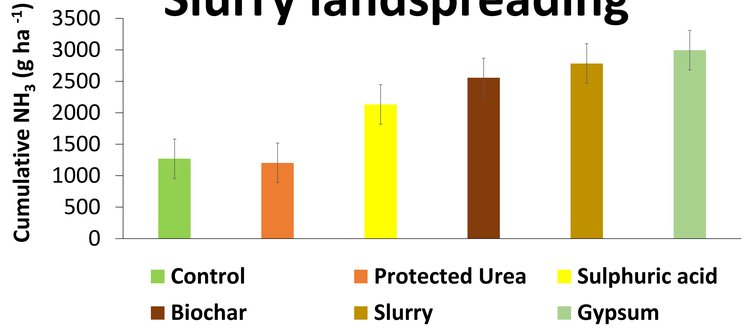
# Slurry acidification & amendments

## How effective are slurry additives at reducing gaseous emissions?

### Slurry storage (tank)




### Slurry landspreading




| Amendment | Impact on gaseous losses / Efficacy | | | |
|---|---|---|---|---|
| | Ammonia | Methane | Nitrous oxide | Mode of action |
| In storage | | | | |
| Alum | 82% ↓ | 96% ↓ | N/A | Reduce slurry pH |
| Ferric chloride | 96% ↓ | 98% ↓ | N/A | Reduce slurry pH |
| Acetic acid | 73% ↓ | 94% ↓ | N/A | Reduce slurry pH |
| Sulphuric acid | 85% ↓ | 95% ↓ | N/A | Reduce slurry pH |
| Sugar beet molasses | ~65% ↓ | ~80% ↑ | N/A | Reduce slurry pH |
| Apple pulp | ~50% ↓ | ~30% ↑ | N/A | Reduce slurry pH |
| Grass silage effluent | ~40% ↓ | ~60% ↓ | N/A | Reduce slurry pH |
| Spent brewer's grain | ~25% ↓ | ~150% ↑ | N/A | Reduce slurry pH |
| Commercial A | - | - | N/A | Microbial |
| Commercial B | - | - | N/A | Microbial |
| Commercial C | - | - | N/A | Microbial |
| Commercial D | - | 10% ↓ | N/A | Reduce slurry pH |
| GEBTech treatment | 28%↑ | 31%↓ | 85%↓ | Chemical reaction |
| landspreading | | | | |
| Alum | 92% ↓ | - | 202% ↑ | Reduce slurry pH |
| Ferric chloride | 54% ↓ | 99% ↓ | 154% ↑ | Reduce slurry pH |
| Polyaluminium chloride | 65% ↓ | 121 ↓ | 29% ↓ | Reduce slurry pH |
| Biochar | 77% ↓ | - | 62% ↓ | Adsorb ammonium |
| Gypsum | 8% ↑ | N/A | N/A | Reduce slurry pH |
| Sulphuric acid | 23% ↓ | N/A | N/A | Reduce slurry pH |
| Biochar | 8% ↓ | N/A | N/A | Adsorbs ammonium |
| GEBTech treatment | 2%↓ | 88%↓ | 36%↑ | Chemical reaction |

## Take home messages

- Slurry acidification is very effective at reducing emissions but requires H & S considerations.
- Other additives that absorb slurry N *e.g. biochar* can offer smaller reductions
- Large variability between effectiveness of various additives for reducing emissions and potential trade offs
- Prior to purchase, consider scientific backing of any formulation