Mafunze Additive Study

Observations and Findings

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Partners in Development

Why Mafunze?

- Latrines of known design
- Latrines of known age
- PID working in community already so no problem with access, councillors etc

Preliminary Measurements

- 50 households with VIPs were visited
- Pit management practices were assessed
- Photograph of each pit taken and odour level assessed subjectively
- Pit contents measured using a laser tape
- The 40 pits required for the trial were selected
- Grouped into 2 blocks: medium or low rubbish and a high rubbish block

Typical Mafunze Latrine

One of the worst latrines in terms of rubbish content

Trial Design

- 5 pits from each block were allocated to each of four treatments:
- Treatment 1 Micromune proprietary pit additive
- Treatment 2 Molasses and water (mixed to 1:5)
- Treatment 3 Coloured water (standard food colour ant 1ml/litre)
- Treatment 4 Nothing added
- Trial run over 16 weeks period

Field work

- 3 litres dosed initially followed by 1 litre
- 5 heights measurements taken before dosing
- 4 readings taken at 0.5 m offset from centre plus centre reading
- Dosage increased to 2 litres after 8 weeks
- Photograph of each pit taken at end of study

Results

- Changes in sludge height calculated every 2 weeks
- Means and medians compared for each treatment
- Total change in height determined from beginning to end
- Average and median change for each treatment calculated
- Table 1 shows the increase in sludge height for 4 treatments for the entire study period
- Figure 1 shows the fortnightly cumulative changes in sludge height
- Figure 2 shows median changes in sludge height for offset measurements

Treatment	Median Change in sludge height at centre (mm)
1: Micromune	78
2: Molasses	55
3: Coloured water	38
4: Control	39

Table 1: Sludge Accumulation for entire trial period

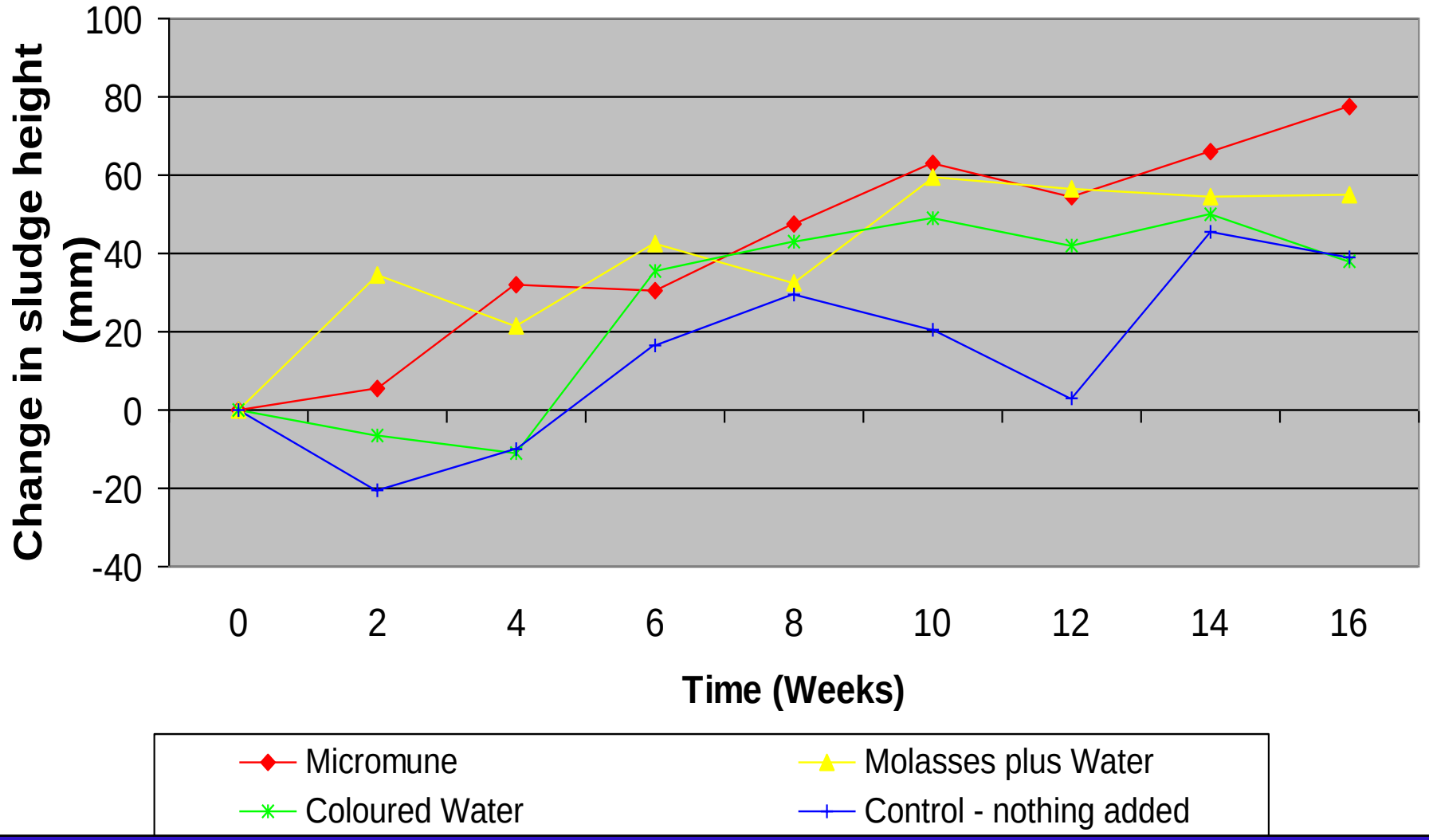

Figure 1: Median cumulative increase in sludge level

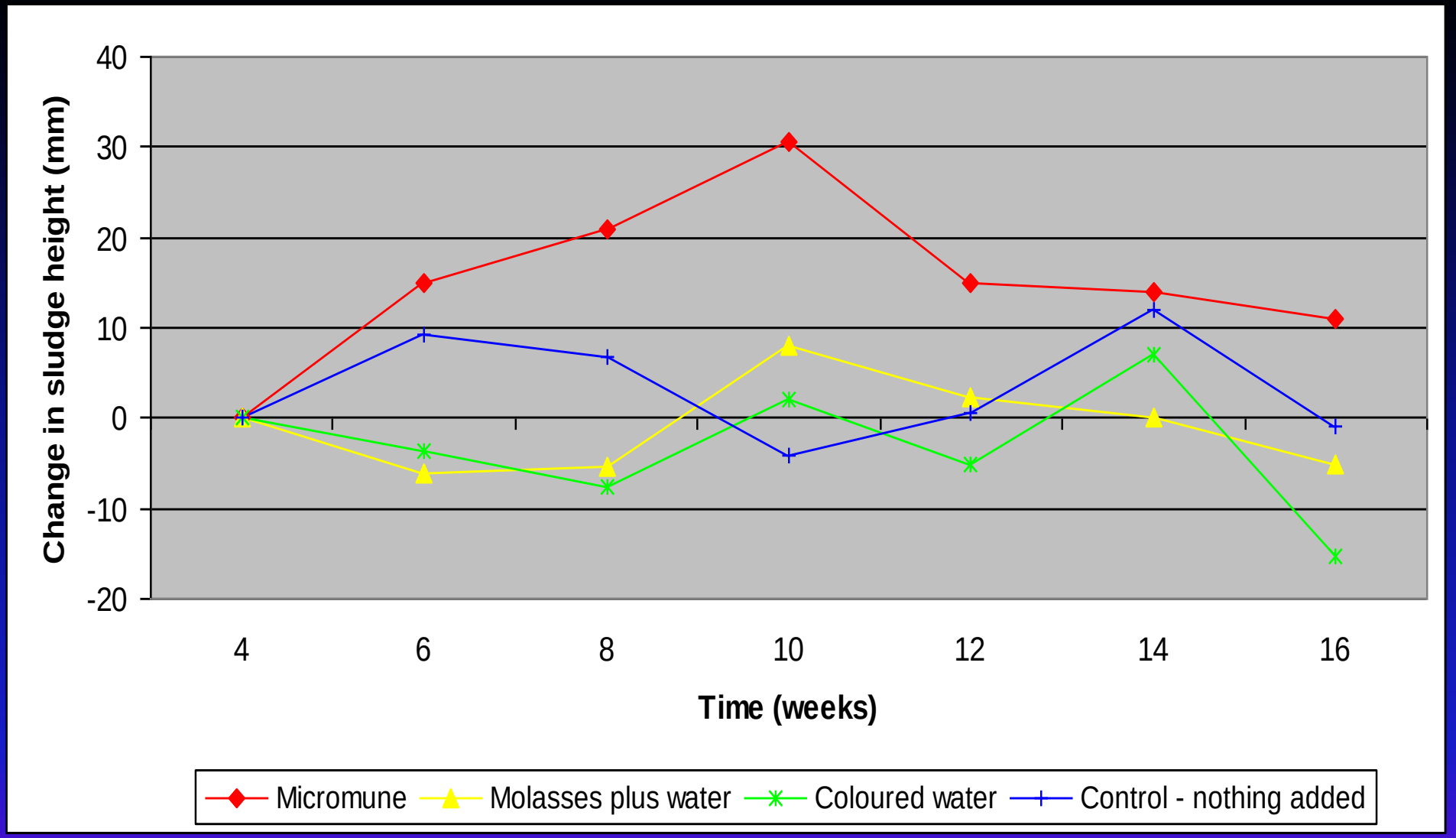

Figure 2: Median changes in sludge height from four offset measurements (0.5 metre offset)

Observations

- Increases equate to filling rates of between 300 and 600 litres in 1 year, but only if height increase was uniform across pit
- Sludge height increase for offset measurements for all cases was negligible
- Median increase for first 3 years was 307 litres per year
- The additive group had the highest increase

Observations

- After 6 weeks all users in first 3 treatment groups reported a reduction in odour
- At least two latrines were found with bad odours from each treatment group
- Results show odour reduction is somewhat subjective and hard to evaluate
- Participants prone to see results that they think perhaps will please researcher
- Table 2 shows results of user perceptions of odour reduction

	Week 10		Week 16	
Treatment	**Perceived reduction in odour (users)**	**Bad odour (assessment by researcher)**	**Perceived reduction in odour (users)**	**Bad odour (assessment by researcher)**
1: Micromune	9/10	2/10	6/10	3/10
2: Molasses	10/10	4/10	10/10	3/10
3: Coloured water	10/10	3/10	6/10	4/10
4: Control	5/10	0/10	9/10	2/10

Table 1:User perceptions of odour reduction in VIPs and independent assessment