EFFECTIVE EFFLUENT MANAGEMENT SYSTEM

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440

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In the typical biological treatment of effluent in a palm oil mill, sludge is produced as the by-product. This is dead microbial material, which accumulates at the bottom of anaerobic lagoons and is rich in plant nutrients and organic matter. Periodically, it has to be removed so that the lagoon does not get 'silted up'. Typically, the removed sludge is applied to crops. Improper managing of the lagoon will result in higher concentration of nitrogen in the effluent, faster and more sludge buildup and a greater likelihood of stench produced.

PRINCIPLES OF SLUDGE MANAGEMENT

Regular sludge and solids removal from POME ponds are routine tasks for the palm oil mill. The following do's and don't's will help millers better manage their anaerobic lagoons:

- Identify and use practices that minimize sludge accumulation;
- Identify the trigger point at which the accumulated sludge should be pumped out;
- Monitor the sludge accumulation relative to the trigger point;
- Do not remove the last foot of accumulated sludge;
- Protect the integrity of the earthen liner;
- Land-apply the sludge and solids to crops at agronomic rates; and
- Limit the stench emanated in land application of the sludge.

In addition to the above, the following tasks are proposed for more effective management of the POME pond to meet the legal discharge requirements:

Method I - Minimize sludge production via systematic administration of dormant bacteria to the anaerobic pond as shown in *Figure 1*. This will reduce

Figure 1. Application of dormant bacteria to the anaerobic lagoon of a palm oil mill.

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the frequency of lagoon cleaning by maintaining high micro-organic activity for faster /more complete solids decomposition in the lagoon.

Method II - Clean the lagoon or recover solids using a mobile filter press, or mobile decanter unit. Following the comprehensive solids recovery, inject the lagoon with dormant bacteria at a specific dose to maintain high activity of the microorganisms. This method is illustrated in *Figure 2*.

APPLICABILITY

- Anaerobic, aerobic, facultative and maturation lagoon sludge management.

BENEFITS

- High microbial activity in lagoon;
- Less sludge produced; and
- Less frequent lagoon cleaning required.

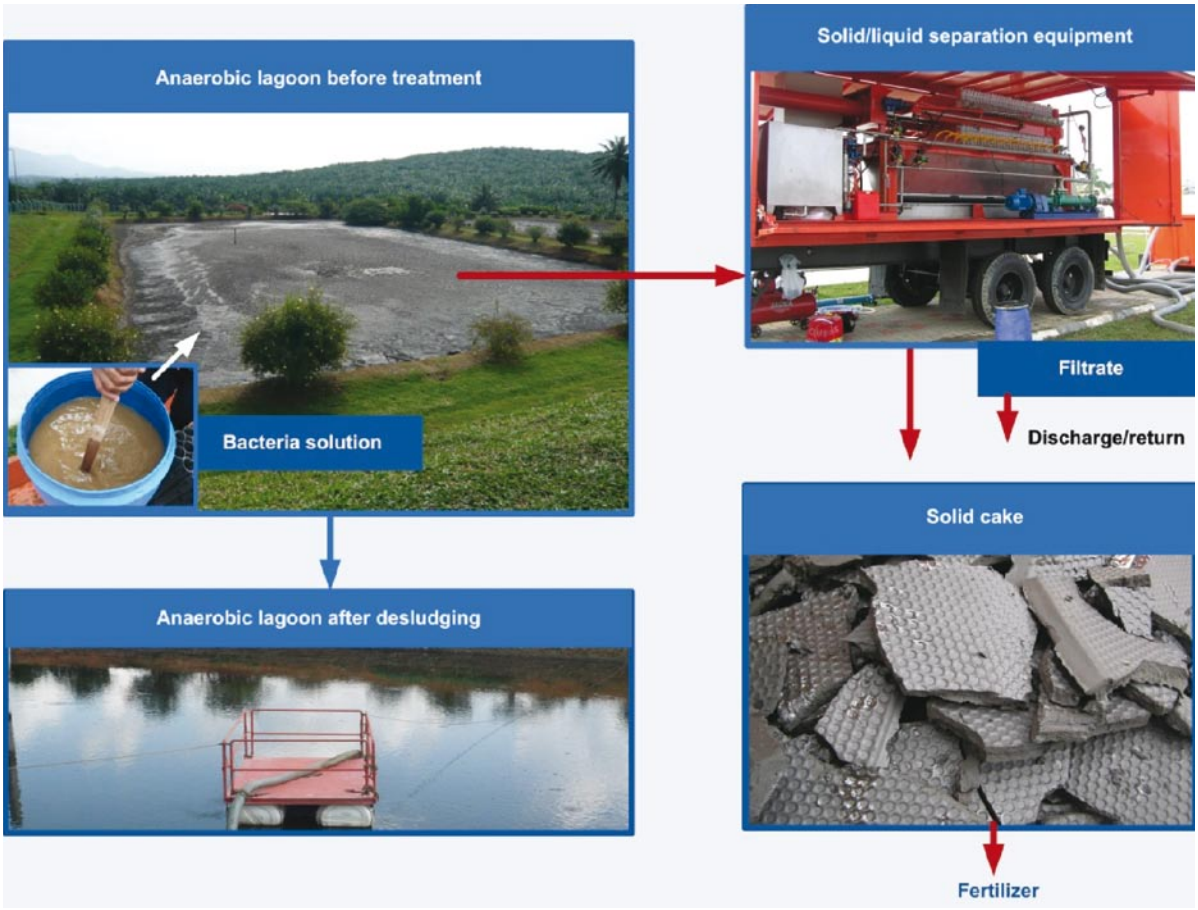

Figure 2. Effective lagoon cleaning using a mobile filter press – done in conjunction with administration of dormant bacteria.

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