

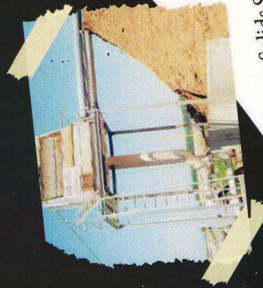
DIGEST 54 PLUS: DAIRY LAGOON DEMONSTRATION

FACILITY:

The facility is an 800 cow free stall barn with automatic manure flush system. Water is recycled through the system. A manure solids separator is located at the end point of the collection system prior to water entering the lagoon. The solids separator is shown in figure 1. Lagoon capacity and dimensions: 1,000 feet long x 50 feet wide x 20 feet deep 1,000,000 cubic feet, 7.5 million gallons

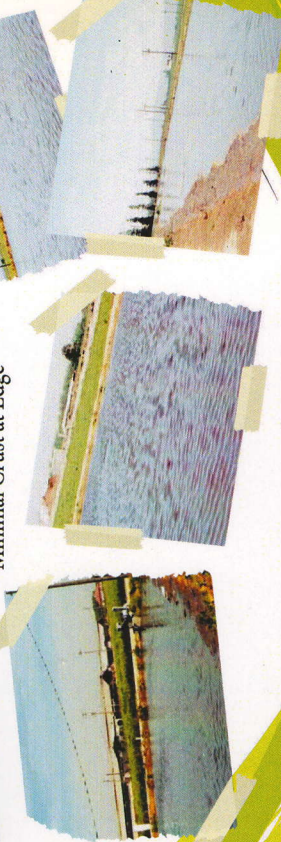
TREATMENT:

- Start with 1 pound Digest 54 Plus per 3250 cubic feet = 300 lbs.
After 2 weeks re-treat with 1/2 pound per 3250 cubic feet = 150 lbs.
- After 4 weeks re-treat with 1/4 pound per 3250 cubic feet = 75 pounds
Monthly thereafter treat with 1/4 pound per 3250 cubic feet
- Applied by hand application around the lagoon on the surface.
- Samples of lagoon contents taken at 8 different locations around the lagoon at start of program and at 2 weeks, 6 weeks, and 10 weeks after beginning treatment.



Manure Solids Separator

Lagoon Prior to Treatment
Minimal Crust at Edge



2 WEEKS AFTER TREATMENT:

Starting to show organic matter on surface. Microbial activity also visible.



Activity and organic matter on surface visible. Microbial activity apparent.



6 WEEKS AFTER TREATMENT:

Crust accumulating but being "digested".



Crust accumulating around edge and in the middle of lagoon due to microbial and enzyme activity.

THE FINAL STAGE: 10 WEEKS

Significant microbial activity. Small amounts of organic matter.



Significant microbial activity still occurring. Note color change.

RESULTS:

At the onset of the treatment demonstration program the lagoon was essentially inactive with no visible degradative bacterial activity. The lagoon surface was clear of surface crusting with the exception of a small ring of material around the eastern (windward) end. This consisted primarily of straw-like material and undigested whole cottonseed. Approximately 1 week after the initial "shock" treatment, there was obvious microbial activity and large clumps of organic matter could be seen rising to the surface. This continued throughout the duration of the observation period with the amounts of organic material decreasing with time progression. At the beginning of the treatment, the lagoon was emitting strong ammonia and waste odors but within 2-3 weeks after initiating the treatment, the odor was no longer noticeable - this was verified by dairy personnel. Initially, samples taken for analysis had the physical appearance of a dark greenish-black, thick liquid. Samples taken at the end of the demonstration period were more liquid, significantly clearer and of a lighter brown color. At the last sampling period (10 weeks after initial treatment), there was still substantial bacterial activity visible.

SAMPLE ANALYSIS*

PERIOD	START	2 WEEKS	6 WEEKS	10 WEEKS
total N	.19%	.217%	.22%	.228%
ammonia N	.022%	.026%	.030%	.033%
organic N	.1688%	.1791%	.1817%	.1885%
phos (P205)	.1501%	.1388%	.0813%	.0563%
K (K20)	.077%	.07%	.0513%	.046%
total solids	6.95%	6.388%	2.838%	2.425%

*figures in each column for each parameter are the average of the 8 samples for that period.