COOL FARM ALLIANCE

Manure Management systems

Description and pictures

Solid storage

DEFINITION

The storage of manure, typically for a period of several months, in unconfined piles or stacks. Manure is able to be stacked due to the presence of a sufficient amount of bedding material or loss of moisture by evaporation.

Manure stack

Manure pile

Dry lot

DEFINITION

A paved or unpaved open confinement area without any significant vegetative cover where accumulating manure may be removed periodically.

Liquid/slurry

DEFINITION

Manure is stored as excreted or with some minimal addition of water in either tanks, manure pits or earthen ponds outside the animal housing, usually for periods less than one year.

View on a pond

***Without** natural crust cover – liquid surface*

***With** natural crust cover – "crunchy surface"*

Uncovered anaerobic lagoon

DEFINITION

A type of liquid storage system designed and operated to combine waste stabilization and storage. Lagoon supernatant is usually used to remove manure from the associated confinement facilities to the lagoon. Anaerobic lagoons are designed with varying lengths of storage (up to a year or greater), depending on the climate region, the volatile solids loading rate, and other operational factors. The water from the lagoon may be recycled as flush water or used to irrigate and fertilize fields.

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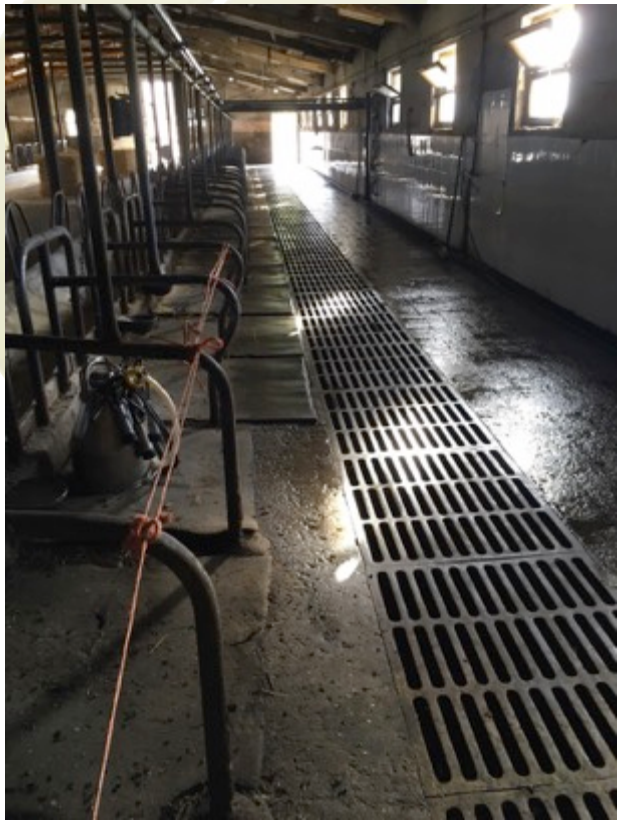
Pit storage below animals confinement

DEFINITION

Collection and storage of manure usually with little or no added water typically below a slatted floor in an enclosed animal confinement facility, usually for periods less than one year.



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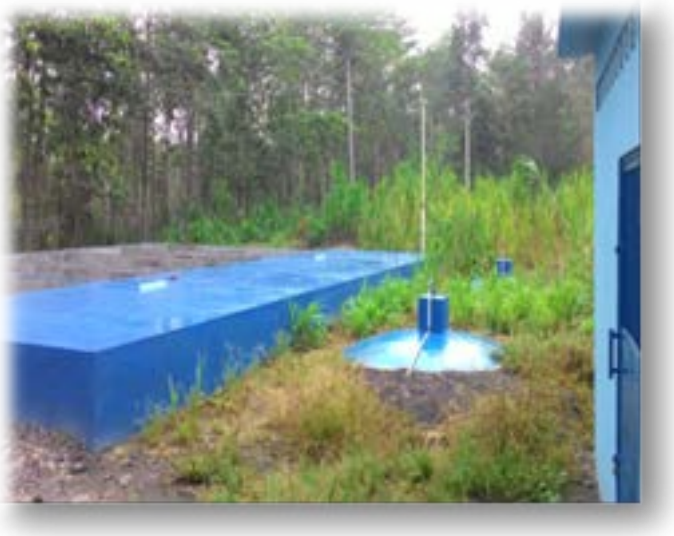
Anaerobic digester

DEFINITION

Animal excreta with or without straw are collected and anaerobically digested in a large containment vessel or covered lagoon. Digesters are designed and operated for waste stabilization by the microbial reduction of complex organic compounds to CO2 and CH4, which is captured and flared or used as a fuel..



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Deep Bedding

DEFINITION

As manure accumulates, bedding is continually added to absorb moisture over a production cycle and possibly for as long as 6 to 12 months. This manure management system also is known as a bedded pack manure management system and may be combined with a dry lot or pasture.

Deep bedding with active mixing
With machinery at least 2-3 times a week

No active mixing

No active mixing on cubical

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Composting- Forced aeration

DEFINITION

Composting in windrows with regular (at least daily) turning for mixing and aeration..

Composting - non-Forced aeration

DEFINITION

Composting in windrows with infrequent turning for mixing and aeration.

LIQUID Aerobic treatment

DEFINITION

The biological oxidation of manure collected as a liquid with either forced or natural aeration. Natural aeration is limited to aerobic and facultative ponds and wetland systems and is due primarily to photosynthesis. Hence, these systems typically become anoxic during periods without sunlight.

Wetland - Natural aeration

Forced aeration

Daily spread

DEFINITION

Manure is routinely removed from a confinement facility and is applied to cropland or pasture within 24 hours of excretion.

Manure tank

Manure spreader

Other existing management systems

Separation of manure (Belgium)

Recovery of N out of manure (Belgium)

Liquid manure compost (Indonesia)

Green manure (India)