

Collection and Separation of Solid and Liquid Swine Wastes

The daily collection and proper management of solid and liquid swine wastes provide many benefits, including sanitary conditions for swine. During collection the manure, urine, and other wastes can be separated to dry or wet forms. Fly eggs will not hatch when manure is completely dry, nor when it is in a flowable liquid form. The very dry and wet forms also minimize odors.

Wastewater reduction

To make the collection and separation of solid and liquid swine wastes more manageable, scrape the pig manure with a hoe or shovel before washing the floors. This is an efficient way to collect the solid wastes. Although it takes time to physically remove the solid wastes, removing the material first will result in cleaner pens, cleaner pigs, a reduction of odors around the farm, and a reduction in the amount of wastewater generated when spraying out the pens. Also, since there is less manure in the pens, they will not have to be washed as often. The pig urine and spilled water can flow out of the pen and into a collection system more easily when less solid matter is in the way. Manure can be collected using gutters, plastic buckets, or a flushing system.

Waste collection: gutters

The liquid and remaining solid wastes from the pens can be washed into gutters. Install a gutter at the back of the pens to direct manure to temporary storage.

Three types of gutters can be installed. All three types require an average slope of 15–30 cm drop on a 30 m run (6–12 inch drop on a 100 ft run).

These types of gutters are:

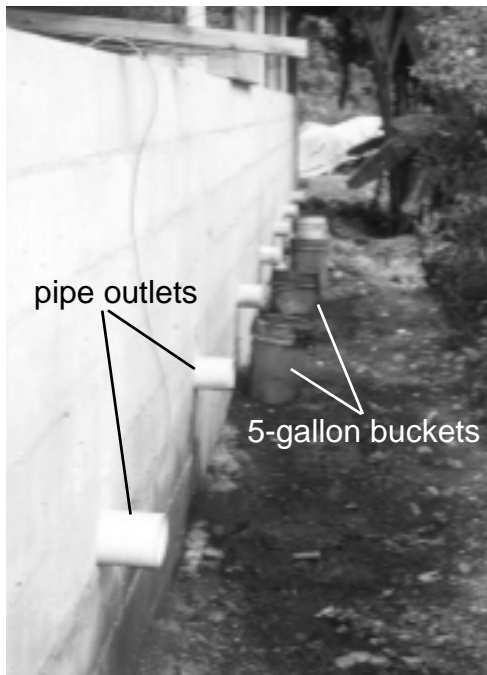
- Concrete gutters.
- Half a PVC pipe, with a diameter of 15–20 cm (6–8 inches).
- Corrugated or fiberglass roofing panels laid down inside gutters dug behind the pen. From the highest end of the pens, each panel should overlap the next panel, leading down toward a collection area.



Concrete manure collection gutter outside pens

Waste collection: flushing

In this type of collection system, the solid and liquid wastes are automatically flushed through a shallow gutter along the back of the pens. For more information see ADAP fact sheet 2003-7 on *New Construction Ideas for Healthier Pigs – Flushing System*.



Manure collection in buckets

Waste collection: direct collection

A direct collection system requires directing the liquid and remaining solid wastes out of the pen through a pipe outlet and into a 5-gallon (19-liter) bucket. For every sow or six piglets, install one pipe and a 5-gallon bucket. The bucket should be located at a strategic point outside the pen and lower than the pen floor. The wastes can then be easily carried away for land application.

Separating solids: settling

Once the liquid and remaining solid wastes have been collected, separating the two materials allows them to be managed differently. The wastes can be directed out of the pens into a tub, tank, or pond where they can settle. After settling, remove the liquids using one of the following mechanisms:

Never apply fresh swine wastes to crops, such as leafy vegetables, that are eaten raw.

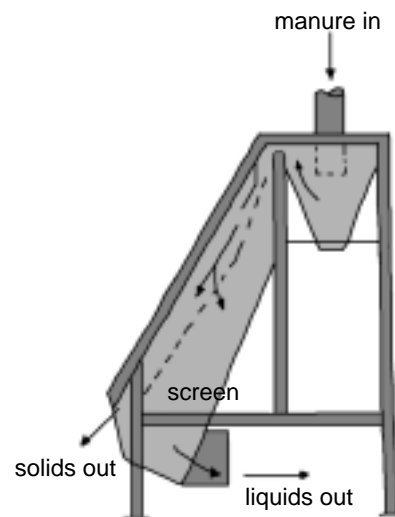
- Put a hand valve on the settling tank to remove liquid wastes.
- Use a pump with an automatic float switch to remove the liquid from the top of the tank.
- Use a pipe to gravity-route liquid from the tank to crop fields. The pipe can be split in half to lower costs.

The solids can be cleaned out of the bottom of the tub, tank, or pond periodically and dried, composted, or carried away for land application.

Separating solids: screening

A screen can be used to separate solids from liquids. Following are some examples of the types of materials that can be used as a screen:

- Commercial stainless screens work well, but are expensive.
- Window screen materials are less expensive and can be set in a wooden frame.
- Coconut husks, piled up, are the least expensive and allow the liquids to flow through and the solids to get trapped in the coconut husks.



Stationary sloping screen

National Pork Board. *Manure Treatment and Storage Alternatives*. NPB-04323. 1995.

Replace the screens or husks when they begin to show wear and tear or when they don't stop the solid wastes from seeping through with the liquid wastes. Coconut husks that have started to break down can be removed and composted for use on crops. Likewise, the solid wastes should be collected and dried, composted, or applied directly to land.

For additional resources and publications, refer to ADAP fact sheet 2003-11 on *Additional Information for Swine Waste Management*.

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