

WISCONSIN BANKERS' FARM BULLETIN

Septic Tanks For Rural Sewage Disposal

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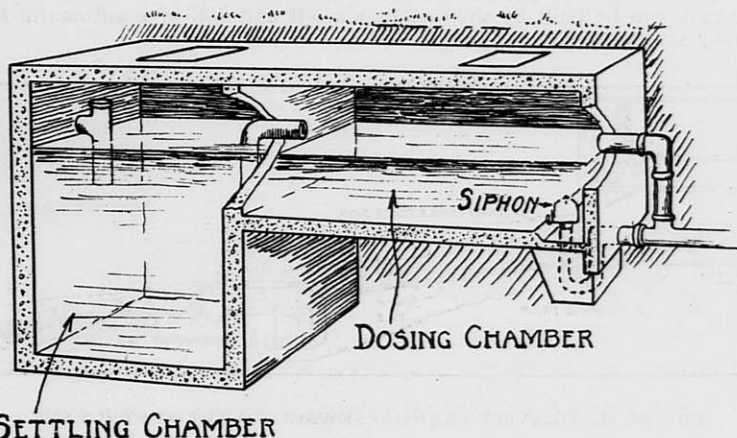


FIGURE 1.—THE TWO CHAMBER SEPTIC TANK

The sewage enters the first chamber at the left where the solids are liquified. Liquid sewage passes through the 6" tile to the second chamber. The automatic siphon discharges the sewage into the absorption tile (at the right) about once in every 24 hours. This intermittent discharge is essential to the purification of the sewage.

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Septic Tanks For Rural Sewage Disposal

Did you ever stop to think what it means to have running water in your farm home? What it will mean to you, your wife, and your family? Kitchen sinks with running water, and drains, and bath room conveniences are usually thought of as city benefits—why not enjoy them on the farm?

With running water, a sewage disposal plant becomes possible. The septic tank will take care of the drain from the kitchen sink, from the bath tub, the wash bowl, and toilet. A cesspool or vault can be replaced by a more convenient, cleaner, healthier manner of disposing of the sewage of the home.

The cost of the septic tank need not be excessive—in fact it seldom costs more than the cost of plumbing and connecting with sewer in the city. The septic tank can be built by the farmer himself and will give automatic service for many years.

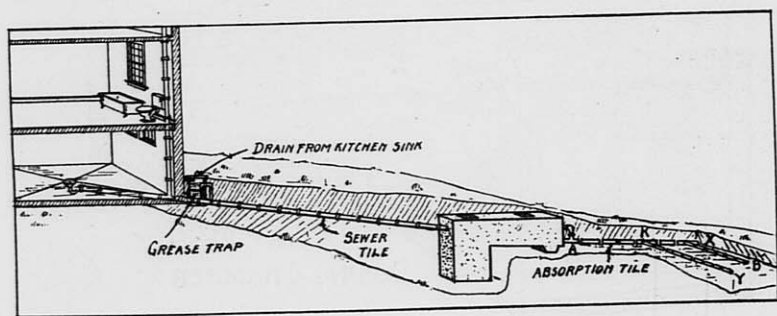


FIGURE 11.—GRAVITY CARRIED SEWAGE TO THE SEPTIC TANK

The sewage is liquified in the septic tank and purified by the aid of absorption tile.

SEPTIC TANKS LAST FOR MANY YEARS

Privy vaults and cesspools fill up in a few years in tight soils and new ones must be dug. In loose soils cesspools last longer but are dangerous to health. A septic tank system operates successfully in a tight or loose soil for many years and purifies the sewage. Septic tanks built 15 years ago are giving as good service today as the day they were completed.

SELECT A WELL DRAINED SITE

A septic tank will not work well in a low wet spot. A little careful planning will usually reveal a satisfactory site. The conditions illustrated by figure 2 are very common. The house is located at a high point and the surface has considerable slope on at least one side of the building. It is possible to select a site for the tank such that the cellar floor and all other plumbing fixtures can be drained into the septic tank without placing the top of the tank

below the surface of the ground. The sewer line from the house to the tank should have a fall of at least 2" to the rod. Four inch sewer tile laid with cemented joints are used.

THE ABSORPTION TILE WORKS BEST NEAR THE SURFACE

A depth of from 18" to 24" is recommended. No difficulty from freezing is apparent in systems where this depth has been used. This shallow depth allows the ground near the tile to dry out and become saturated with air between the intermittent doses of sewage. Air is necessary for the life of the bacteria, in the soil, which aid purification. Four inch drain tile laid with a fall of 1" in a rod and an $\frac{1}{8}$ " space between tile, allow the sewage to escape through the soil.

The absorption tile AX (fig. 2) is staked out on the slope and the distance AX selected so that the bottom of the tile at X will be about 2 ft. below the surface. The line XB is staked out across the slope and has a practically uniform depth of 2 ft. The line YK is staked out parallel to XB and about 10 ft. to one side. The amount of tile required is given by the table. For a tight clay soil these figures may well be increased by 50 per cent, and in this case about 8 or 10 inches of gravel, crushed stone or cinders should cover the tile before filling the ditch with earth.

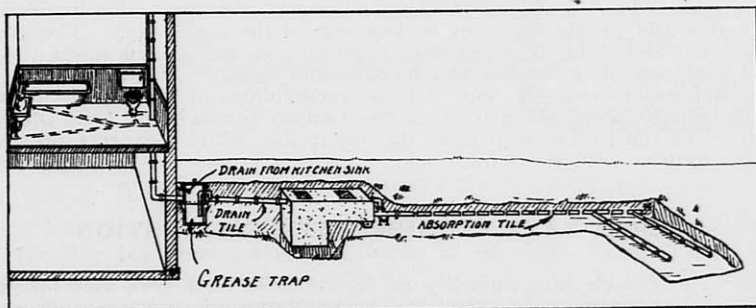


FIGURE III.—A SEPTIC TANK CAN BE USED ON A LEVEL SITE

The absorption tile are given sufficient fall by placing them a few inches deeper at N than at M.

A SEPTIC TANK CAN BE USED ON A LEVEL SITE

Very often farm buildings occupy a practically level site. In this case it would not be practical to attempt to drain the basement plumbing fixtures into a septic tank by gravity. All other fixtures, however, could be drained to the tank. The tank in this case may be built about three feet from the house wall (fig. 3) with its top from $1\frac{1}{2}$ to 2 ft. above the surface of the ground. The absorption tile will then be about 18 to 24 inches below the surface and the sewer tile will be exposed above ground. The sewer tile and tank can be completely covered by building an earth mound over the septic tank and extending the fill to the house wall. If the ground is level on all sides, the tank should be set so that the absorption tile at the tank will be about 16" to 18" deep. By giving the tile a fall of 1" to the rod the farther end of the tile lines need not exceed a depth of 24 inches. If the well is near the house the part of the line MN (fig. 3) nearest the house should be made of sewer tile with cemented joints.

A SEPTIC TANK CAN BE BUILT BY FARM LABOR

Use a carpenter's level and a straight edge to select the site for the tank and to lay out the absorption system and sewer line. The size of tank required is given in the table. If dairy waste will be run to the tank select a size larger than would otherwise be required. Use a 4" x 17" automatic siphon. All figures refer to inside dimensions.

No. of people	Size of Settling Chamber			Size of Dosing Chamber			Absorption system No. ft. of the
	End wall to partition	Side wall to Side wall	Cover to floor	End wall to partition	Side wall to Side wall	Cover to floor at wall	
5 or less	2½ ft.	5 ft.	4½ ft.	2½ ft.	5 ft.	29 in.	120 ft.
6-8	3½ ft.	5 ft.	4½ ft.	3½ ft.	5 ft.	29 in.	175 ft.
9-12	5 ft.	5 ft.	4½ ft.	5 ft.	5 ft.	29 in.	250 ft.

The excavation for the septic tank and the construction of the forms are done in much the same manner as for a small foundation wall. The bottom of the tile, at the inlet to the tank, at the partition between chamber and at the overflow is placed 12" below the cover of the tank. The automatic siphon is set plumb, with the ring, on its longer leg, 35 inches below the cover of the tank. Boards laid over the top form the cover. The walls and cover are poured at the same time, using concrete mixed in the proportion of 1 part of cement to 2 parts of sand to 4 parts of gravel. The forms may be removed one week after the concrete is placed, and the floor of the tank may be poured.

A grease trap is needed for kitchen waste. Grease is not liquified by septic action and should therefore be kept out of the septic tank. The grease trap (see fig. 2) is built by cementing together two 22" glazed sewer tile set on end and providing a concrete bottom and cover. The inlet from the kitchen sink enters near the top. Grease accumulates at the top of the trap while the excess water escapes from the bottom through the bent tile line. The outlet of the grease trap joins the sewer line which connects the other plumbing fixtures with the septic tank.

A SEPTIC TANK REQUIRES LITTLE ATTENTION

It may need cleaning once a year. Some tanks have been used for years before cleaning became necessary. The accumulation of sludge may be noted once a year and if considerable should be removed. With this small amount of care the septic tank works on indefinitely providing a safe means of disposing of household sewage.

SEPTIC TANKS PREVENT MUCH DISEASE

Cesspools and privy vaults contaminate the soil water with disease germs. This soil water may find its way to a well or spring at a considerable distance. Well water, apparently clear, may be reeking with germs. The only safe way to protect well water is to remove all sources of pollution. The septic tank promotes the rapid decomposition of sewage and its absorption system removes all the harmful germs. The entire process is accomplished underground and no foul odors are evident.

Circular, Sewage Disposal for Farm Homes, a free copy of which may be secured from the Director of the Agricultural Experiment Station, Madison, gives a more detailed discussion of septic tanks, their construction, and operation.