

Tanking or Pumping Your Manure Slurry



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There are several options of getting your manure slurry out of your lagoon and into your fields. Three of the popular options are:

- 1) Ag tractor and tanker hauling and field application,
- 2) Semi-Tanker hauling to fields edge with drag-line application
- 3) Continuous flow drag-line application method.

The type you select will depend upon how many gallons you need to remove, the type of manure pit or lagoon you have, how far you are from the field and if you are trying to do it yourself or hire a professional pumper or tank operator.

No matter which method you ultimately settle on to transport and apply the slurry to the field, there is one step that is always required and that is agitation. Without proper agitation you will not be able to effectively remove the solids, you will just remove top water. When pumping slurry out of a lagoon the effluent or slurry will come from the source of least resistance; so getting the pit well mixed is paramount. You need to mix the lagoon solids into a product the consistency of a loose pudding or ketchup.

Ag Tractor and Tanker and Field Application

For under barn pits and small outside lagoons with less than 1 million gallons the tanker pulled by a tractor is a popular option. With this kind of a set up, an operator would need a PTO driven stick agitator or a vertical deep pit agitator, a load stand, a 4000+ gallon tanker and at least two 200 hp tractors.

If your pump and load stand was pumping at 1500 GPM it would take you 3-5 minutes to load and 5-7 minutes to unload. Then it would be your travel time to and from the field; with a full tank your speed would be 4 to 5 mph and return trip with an empty tanker twice that speed. If each round trip took 30 minutes it would take 100 hours per million gallons to load, haul and apply the effluent. In addition to the hauling there would be your agitation, set-up and clean-up time. With a 5000 gallon tanker and a 10 hour day, your daily limit would be about 100,000 gallons. It would take 200 trips to remove a million gallons.

A tanker pulled through a field can apply the effluent in one of two ways:

- 1) broadcast or surface applied by pumping the effluent against a splash plate,
- 2) by injecting the effluent with a series of sweeps on the back of the tank.

The down side of in-field tanker application is four fold: 1) the length of time it takes to deliver one tank load to the field, 2) the soil compaction of a heavy tanker being driven repeatedly over crop ground (*5000 gallons of effluent weighs over 21 tons plus the weight of the tractor and empty tank*), and 3) the initial investment of the tanker and agitation equipment, and 4) the added time required for owner and employees on top of the normal operation to accomplish the cleanout during the limited window of opportunity prior to spring plant or after fall harvest.

If your lagoon clean-out happens every year and you have the experienced help then the purchase could be considered a good investment. If you pump occasionally then using a custom pumper or tank operator would be the better decision.

Semi-Tanker Hauling to Fields Edge with Drag-line Application

This is a hybrid operation which involves both semi tankers and continuous flow slurry injection in the field. Due to the amount of trucks, tanks, tractors and equipment needed this type of operation is generally limited to a custom manure applicator. It involves a fleet of 4 or more semis pulling old 6,000 gallon fuel tanks adapted for manure slurry hauling. This type of an operation is generally used only where continuous flow from the lagoon will not work due to lack of culverts or hauling to fields that are over 4 miles from lagoon.

This operation requires 4 pumpers plus 4 or more truck drivers. The pumping personnel needed are: 1) field tractor and injection operator, 2) agitation and load stand operator, 3) person who hooks and unhooks tankers by side of field, 4) person to handle the frac tank and pumps.

The key to efficiently working is to keep the continuous flow injection tractor moving and slurry application not being hindered by lack of effluent to apply. This requires sufficient number of semi-tankers to keep the process going non-stop. If pumps are used to suck the effluent off the trucks and into a frac tank, it will take 6-8 minutes per load; with this arrangement you can off-load 6 to 8 trucks per hour.

Federal DOT rules for commercial drivers limits them to driving 11 hours per day. Due to the increased complexity of the operation it is best to limit tanking operations to daylight hours. With the best of operations your pump out and field application would be limited to 80 loads per day or about 480,000 gallons. The amount of gallons applied per hour is roughly 36,000 to 48,000 or about 600-800 GPM; this flow rate is about 1/3 that of a continuous flow drag line method.

Due to large amount of equipment, truck drivers and pumpers involved the cost per gallon delivered starts at 2.5¢ and higher with more trucks and drivers going further distances.

Continuous Flow Drag-line Application Method.

Continuous flow drag-line method of application is usually done exclusively by custom manure applicators.

It involves agitation and continuous flow of the manure slurry through 8" fire hose that goes across fields, through culverts under roads and to the tractor which pulls an injection tool bar across the crop field. The pressure and flow is maintained by a series of booster pumps that are every half mile to a mile apart.

Continuous flow drag-line operations normally apply over 1,800 to 2,400 GPM and are not limited to daylight hours. Normal pumping will move 1 million or more gallons to the crop fields per day. The cost for pumping depends mostly on how thick the solids are and how far you are pumping the manure slurry. The cost starts at 1.2¢ per gallon and can go over 3¢ when pumping far distances with very thick slurry.