

Article 158_Tiling: It's more than laying pipe_10-30-2018

Or

You might know about tiling your bathroom, but tiling a field?

What the world is field tile? Why is it important? Who even uses it? All really great questions! Field tile has been used for centuries, as in field tile is mentioned in ancient texts and shards of field tile have been found in archaeological digs in Greece and China. It's basically a way to drain water from a field that is currently wet. It makes the field more productive. The concept is that farmers lay tile in trenches underground so that water runs away from the field and into a ditch or swamp.

Clay or almost like terra cotta tile pieces were used in fields as late as the 60's and early 70's. The author's dad, Marlin Venema, a retired farmer in Osceola County resurrected a few pieces. Those pieces are heavy folks! I can't imagine the work that went into laying those in a trench.

Since the 70's and probably a little earlier, plastic is the choice for field tile now. It's a lot easier to transport and it lays so much faster. The tile comes in big rolls, not pieces like the clay tile did. It also perforated to allow water to drain into the tile and be moved off the landscape.

Purposeful drainage

Not all soils are created equal. You can go in your own yard and find sand and more than likely a clay like soil in another part of your yard. Fields are the same way, some parts drain very well and other parts don't. The water just sits in that section and stays put making that part of the field unproductive. Or like in the Thumb area of Michigan, the soils are fairly heavy, have a low water table, but are extremely productive soils.

Installing field tile can help lower the water table by draining the water to another area like a ditch or to a wetland. Many fields here may need to be only spot tiled where certain parts of field just need a little more drainage to increase crop production. In other areas, the whole field may need to be tiled, which sounds like a lot and it is a big investment. That investment is generally worth it. The field can become much more productive and useful to the farm.

Tile not only lets water drain, but allows for the heavy equipment, farms use to move across the field and not cause nearly the rutting or compaction that was once common on that field. Compaction is a term that means the soil is compressed which then doesn't allow plant roots to penetrate deeper to look for water or nutrients causing plants to not grow very well.

When a whole field is tiled there's a system or method to the madness so to speak. The tile is spaced so many feet apart run in straight lines that come into a main piece that then will drain into typically a ditch. Tile line itself comes in different sizes.

How does this get into the ground?

Let's talk machinery! Every little kid loves big machinery and let's be honest most men do too. There are self-propelled tile digging and laying machines, or pull behind tile plows. Basically,

the plow or machine digs a trench while laying the tile in the ground and then the dirt falls back in the trench.

Since you're digging so deep a lot of horse power is needed. A lot of the companies that do tile laying professionally use a large tractor on tracks or a dozer on tracks. Why tracks instead of tires? Tracks spread out the weight of the vehicle better over a wet surface reducing compaction and the chance for getting stuck.

The tile is mounted on a reel that feeds that into the tile plow which is just a huge shank that digs and lays the tile. The reel might be mounted on the equipment or pulled next to the tile plow.

Environmental Concerns

Of course with added drainage there comes a chance for nutrients to run off from the drainage. Farms reduced surface run off by adding tile, but in some areas of the state run off from the tile is a big issue too. Liquid manure or injected manure have been known to run out of some of these tile lines in the Thumb.

Farmers have learned to plug the end of the tile before manure application and let the soil draw the nutrients out of the tile before opening up the tile line again. Same for fertilizer applications. Large rain events can cause lots of fertilizer to run out of the drains if not managed correctly either with the cap or by applying fertilizer a bit later in the season and with smaller amounts of fertilizer applied throughout the growing season.

Other solutions include installing water level control devices. These look like upright boxes a couple of feet tall. These are installed on the main drainage line and help manage water levels in the field. These devices along with inline water sensors can help farmers hold the water in the tile lines so nutrients are kept in the soil profile rather than literally going out the drain. These structures and devices can be used to keep irrigated water in the root zone when the soil dries out in the summer months too.

Positive Benefits

Tiling is actually good for heavy but productive soils. It can make soils healthier by allowing the water to drain to allow for microbes that are good for soil health to work. Too much water in the system doesn't allow for that.

Reduction of soil moving off the field from water erosion is another benefit of agricultural tile. Water can infiltrate the soil rather than run off the landscape taking valuable farm land with it. A cover crop would help with that too and a farm could reap the best of both worlds!

We've talked about some of the solutions, the devices and technology used to conserve nutrients applied to soil and how tile can help keep nutrients in place with those devices.

Like all things in agriculture there are always benefits and concerns to any practice. Tiling is no different. But when used and managed well it can be an effective tool.

Special thanks to Daniela Dryer of Dryer Farms & Daughters Mandy Teachworth of Hazel Brothers Drainage, both from Ionia County, & Marlin Venema and Ken VanPolen for pictures and information.



Old clay tile from Marlin Venema's farm. Jodi DeHate photo



Roll of Agricultural Tile from VanPolen Dairy. Jodi DeHate Photo



Hazel Brothers Drainage tile plow, dozer, and reel. Photo

Mandy Teachworth



Hazel Brothers Drainage at work. Photo Mandy Teachworth



Dryer Farms & Daughters tile plow. Photo Daniela Dryer



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Dryer Farms & Daughters tile plow at work. Photo