

## What is field tile?

Field tile is tubing or pipe buried in the ground to convey subsurface water to an outlet such as a stream or ditch. Farmers install tile in agricultural fields to make the soil conditions more uniform, dry up wet spots, reduce erosion and prevent crop roots from rotting during wet periods. This improves crop yields and prevents compaction of the soil. When a field has uniformly spaced tile throughout, the ground is not normally saturated when a heavy rain falls, thus allowing water to soak into the field rather than running off. This helps keep nutrients and topsoil in place. Sometimes where your lawn is more lush can indicate the presence of a tile. Water rights/Ohio Drainage Laws should be followed when encountering or installing tile. Refer to OSU Extension Bulletin 822. Septic systems should not be connected to field tile unless permitted by Fairfield Dept. of Health.

- Tile is usually made of orange clay or plastic (black, white or yellow).
- The transition between installing clay tile to installing plastic tile happened in the mid 1970's to early 1980's.
- Depth typically varies between 2.5 feet and 5 feet deep, but can be much deeper. Clay tile tends to be on the shallow end since it was often installed by hand.
- It costs approximately \$90,000 to tile a 100 acre field (more if mains are large).
- The investment can be recouped in approximately 5 years in agricultural settings.



Above: Farm fields shown with systematic tile and random tile. The field with the systematic tile is much dryer than the one below it with random tile. Tile can be seen in aerials if soil conditions are right at the time of the flight. Plastic tiles tend to show up better than clay. Tiles are harder to see in grassed areas, like lawns on aerial photos.

## Tile Maintenance

Tile can fail due to:

- clogging, usually by tree roots. We usually recommend that trees be at least 75' away from any tile line. We recommend animal guards in inlets and outlets to prevent an animal from crawling in and getting stuck. If a tile has a surface inlet or "breather", debris can get inside and obstruct flow.
- disruption by another utility or construction. Sometimes when new underground utilities, basements, ponds, etc. are installed, existing tile is hit causing damage without knowing it right away. When hit during construction, tile must be reconnected or re-routed.
- crushing due to being too shallow or too deep or due to heavy weight over it. Driveways, the weight of vehicles, trailers, etc. could be too much on tile. We recommend at least 24" of soil cover over 4" and 6" tile and 30" over 8" or larger. If over 5' deep, we recommend a double wall tile for strength.
- poor connections to a lateral tile. Tile manufacturers do make connectors (Ys or Ts) and size reducers for tile connections.
- pressurization. When surface water is introduced into a tile system through a riser, French drain, downspouts, or other surface inlet, a tile can be pressurized and deteriorate. An orifice plate is recommended in surface inlets to prevent this. A breather can also be added.
- poor outlet condition. We recommend solid PVC tile where the tile comes out of the ground to outlet into a ditch or stream due to strength and UV protection and it reduces erosion at the stream bank. We also recommend a minimum of 1' of freeboard (bottom of ditch or stream to bottom of tile). If a tile outlet is under water or has become buried in soil sediment, it can not flow properly.
- poor installation. Tile relies on gravity to flow properly. If there is a high spot in the tile or a low spot due to settlement, it will not drain. Was tile installed on exposed rock? Was it stretched too hard? Was tile exposed to sunlight too long prior to installation?
- improper size, if a tile is too small in capacity to handle the flow.
- age. Similar to your plumbing in your home, tile needs to be maintained and eventually replaced.

Indications of failure:

- A blowhole indicates where tile is failing.
- Water pooling in places it hadn't before.
- A stream of water that appears from nowhere or a small hole.

To make repairs or replace:

- call OUPS (811) before any digging to verify no other utilities are in the way
- If you have a blowhole, dig that area further to see if you find a tile to determine what is causing the hole. If it is due to a tile, it needs fixed or replaced, not just filled back in, or you will continue to have issues and it will reoccur.

If you need help with this, we have a contractors list on our website at [www.fairfieldswcd.org](http://www.fairfieldswcd.org) for those who can be hired to work on tile.

If you are good with a computer and are interested in aerial imagery, download Google Earth Pro (free version), enter the address or intersection in the search window at top left, and click on the clock in the toolbar at the top which allows you to scroll through several years of aerials (usually 1994-2017 depending on location) through the timeline. Many of these are the same ones we have, although ours go back further to 1938.



# Tile or Subsurface Drainage – picture examples

Tile is a component in many of the practices we use including along grassed waterways, overflows for springs/watering facilities, WASCObS, etc. It aids to drain water from the soil profile and is ideally 3’ deep for optimum drainage and as to not be crushed with the weight of large equipment. Whole field tile systems can also be designed. Most often spacing between tile laterals ranges from 30’-50’ in crop fields. Vineyards have been designed as close as 10’ apart. Shown are different types of inlets: catch basin, hickenbottom riser with beehive type top to prevent debris from getting into tile. The restrictive orifice prevents tile from being pressurized. Also shown is a tile outlet with an animal guard to prevent rodents from climbing into tile.



below- various types of tile



above-tile system in farm field

Surface inlets: above-catch basin, below-riser. Be sure that earth/basin is lower than culvert elevation as to not back up water into culvert or across a property line. Inlets/tile should preferably be installed outside of the road right-of-way. If not possible, get proper township, county, or ODOT permit.



below-riser inlet showing restrictive orifice plate



Tile failure: above-clay tile exposed, right-blow holes flagged in field, below: clay tile exposed in blow hole.



below-PVC outlet with animal guard and stone protection

