Chapter 15

Septage Waste Application to Trees and Land Sites with Drainage Tiles

15.1 Trees and Application of Septage Waste

Some haulers have inquired about whether they can land apply septage waste to trees such as maple and Christmas trees. Trees can benefit from nutrients available in septage waste. However, the mechanics of supplying these nutrients to the trees uniformly at agronomic rates and at the same time reducing vector attraction and pathogens efficiently are real challenges that confront the haulers and the community.

15.2 Recommendation

It is not recommended for septage waste to be land applied to tree crops. Any request for land application to trees shall be handled on a case by case basis.

15.3 Basis for the Recommendation

The recommendation of not allowing the land application of septage waste to tree crops is based on the following challenges:

15.3.1 Vector Attraction Reduction and Pathogen Reduction

Current methods of nutrient application to trees do not address vector attraction and pathogen reduction issues when septage waste is the means of supplying the nutrients. Surface application of septage waste followed by incorporation within 6 hours or 48 hours, if lime-stabilized and subsurface injection methods are not effective vector attraction reduction and pathogen reduction methods for trees. The ineffectiveness is due to the presence of extensive root systems that interrupt proper incorporation and/or injection. Moreover, tree roots would be damaged during the process of nutrient application. Foliar or trunk application of septage waste is unacceptable due to health, aesthetic, and nuisance concerns.

15.3.2 Uniform Agronomic Application

Uniform application at agronomic rates is very difficult to achieve when septage waste is applied to trees. Effective nutrient application to trees depends on understanding the interaction of factors such as the type of plant, stage of plant growth, pattern of plant arrangement, length of space between plants in a row and between rows, and other factors.

15.4. Drainage Tiles at Septage Waste Application Land Sites

Some land sites used for septage waste application have drainage tiles. Drainage tiles are usually installed in agricultural fields to improve drainage. They tend to lower the water table, making more land available for crop production. The movement of nutrients and other contaminants through drainage tiles to ditches and other bodies of water is possible and can create environmental problems. Best management practices (BMPs), including soil and nutrient management, can reduce the pathways of nutrient movement and loads to the drainage tiles and subsequently to surface waters. Some of the pathways of subsurface nutrient movement to drainage tiles include cracks and channels caused by earthworms, plant roots, and residues. Cracks tend to occur more during the dry period of the year. The degree of their occurrence depends on the soil type. You may get additional information from these references [1, 2].

15.5 Recommended Action

Where drainage tiles are present at the land application site:

- Prepare a diagram of the field and identify the location of the drain tiles in the field on the diagram.
- Check and determine whether the tiles are still open and doing what they are supposed to do or are they clogged and not working.
- If they are open and working, till the land to cover cracks and other potential pathways prior to septage waste application.

- Do not apply more nutrients than the recommended maximum agronomic application rates.
- Do not apply more septage waste than the ability of the soils to absorb the liquid (or do not exceed the hydraulic loading rate of the soil).
- Do not land apply during rain.
- For new land sites that have not received septage waste, it is important to get a baseline sample and analyze the effluent for E. coli, fecal coliform, phosphates, ammonium, nitrates, and nitrites prior to land application of septage waste. This will provide a base line value for comparison with future sampling results. Submit sample result to the MDEQ.

  After the initial baseline sampling, collect another effluent sample from the outlet after 2 years for analysis of the same parameters as stated earlier about the same time of the year but preferably shortly after rainfall during the period septage waste is being applied.

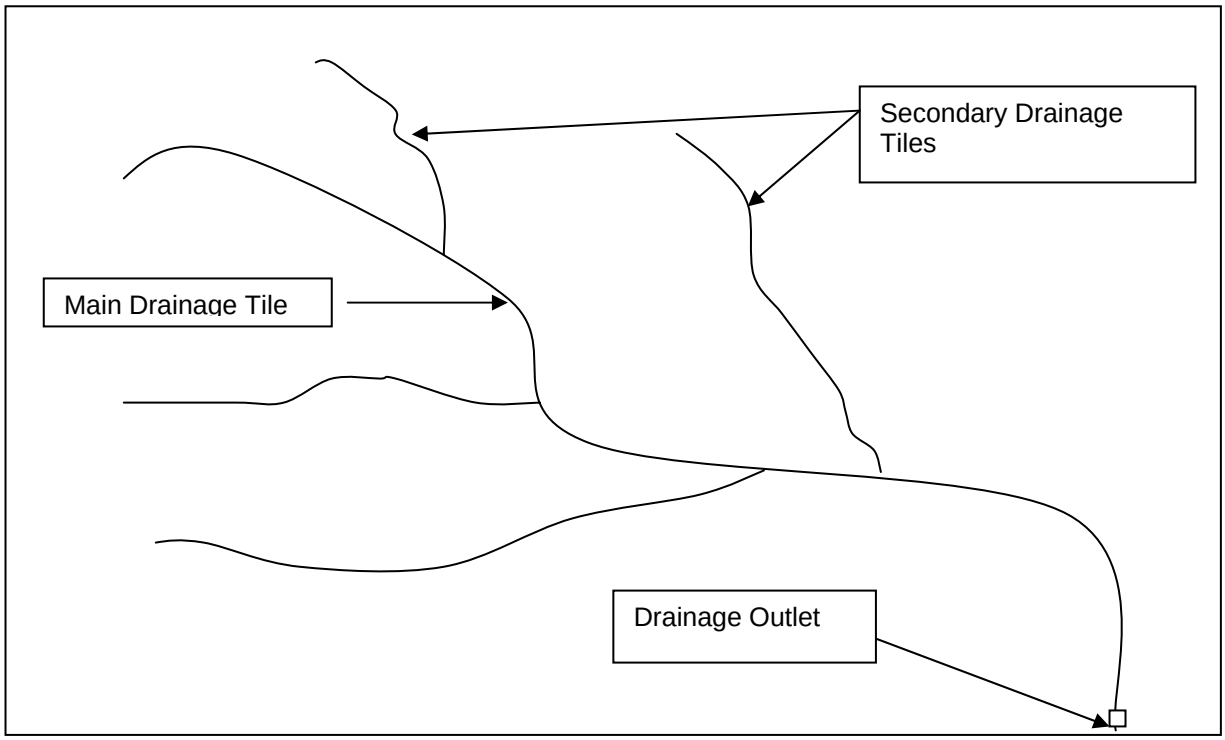

Figure 15-1. Septage Waste Application in Fields with Drainage Tiles

15.6 References

1. Busman, L, and G. Sands. 2002. Agricultural Drainage. Issues and Answers. University of Minnesota Extension Service, MI -07740.

2. Harrigan, T, B. Northcott, N. Rector, and D. Bolinger. 2007. Part 2: Tile-drained Land. Michigan State University Extension Bulletin WO-1037.