FPR - Land Application System Plan

Farm Site Selection:

Lloyd Z Nolt Trucking (Nolt) hires a consulting company to develop site maps for each farm that is utilized for the land application of Food Processing Residual Waste (FPR). They utilize the siting requirements listed in Chapter 8 of the Food Processing Management Manual to provide Nolt a map of the areas within a field that are suitable for the land application of FPR. They are including the suitability of the soil along with the setback requirements listed in table 8.11.

Material Analysis:

Nolt collects a sample quarterly from each FPR that is land applied on their farms. The main utilization of the FPR is as a fertilizer replacement; therefore, the analysis are completed for agronomic nutrient analysis. These results are utilized to determine application rates.

Material Selection:

Prior to starting to land apply any FPR Nolt collects a sample of the FPR and has it analyzed for nutrient analysis to make sure there is some beneficial use for land application of the FPR. A meeting is completed with the generator of the FPR so that Nolt can have an understanding of the material that is land applied. Once major question at this meeting is to make sure there is no human or septage waste included in the waste stream they are classifying as FPR. If there is any human or septage waste Nolt cannot land apply this material as a FPR. Secondly, we determine the treatment level completed at the producers operation. Many of the FPRs that are land applied are the by-products of a treatment operation such that the plant has completed treatment of the waste products. Lastly, an evaluation of the odor and potential fly and rodent attraction is completed personally by Nolt. There is nothing scientific about this evaluation, through many years of experience Nolt can determine if a material is going to have an odor that is offensive or attract flies or rodents. Materials need to have a low to medium odor and low attraction of flies or rodents to be included in the land application system. This is not to say that at times an individual load or group of loads might have an elevated odor due to issues at the producer's plant.

Land Application Procedures:

The FPRs are land applied utilizing standard tankers or other self-driven land application equipment. Whenever possible, FPR materials are injected into the soil to reduce potential for runoff and to reduce odor. At times, materials are land applied on the surface with no incorporation; mainly due to needing to reduce soil loss concerns. Since the main goal is to utilize the FPR for fertilizer replacement and the goal is to produce the most crop as possible, soil compaction is always a concern during land application events. Therefore, when fields are not fit for land application and soils will be hurt, FPR materials are stored in DEP approved storage tanks. These tanks are utilized and then when fields are fit for land application they are emptied and land applied.

Record Keeping:

During the land application process, records are maintained on each load of FPR that is applied to a field. These records are maintained on a monthly basis for a given field. Each load is equal to 5,000 gallons of FPR land applied.

Nolt contracts with a local agronomic firm to soil sample each field on a regular basis. Each field is soil sampled once every three years for basic fertility values. These soil samples are utilized in the selection of fields for materials in a given year and for lime applications as needed. (some materials have higher levels of one nutrient and lower of another so they are moved around to different fields based on FPR analysis and soil sample results)

Nutrient Management:

Nolt contracts with a local agronomic consulting firm to provide guidance for land application rates. Utilizing the FPR results, the soil samples, records for land application, and the planned crops for a given field the consulting firm completes a nutrient balance for the past years applications and provides guidance for the next years applications. Application rates are based on Nitrogen as directed by the Food Processing Management Manual.

Since Nolt land applied a few different FPR materials, one of the FPR materials has been selected as the 'standard' and all the other FPR materials are given an equivalent value to that 'standard'. In this report, FPR #7 is the standard.

This simplifies application guidance. For example, if one field is determined to be able to receive 10 loads of the 'standard' FPR and Nolt plans to apply a different FPR that has a 2.0 standard equivalent, Nolt knows that it can only apply 5 loads of that material to that field since the planned FPR has 2 times the nitrogen value as the standard FRP used to determine the application rate.

Potential FPR Products Nutrient Analysis

Material	Total N	N-NH4	Organic N	Solids	FPR #7 Equivalent
12/31/21	lb./1,000 gal				1 load FPR #7 =
FPR #1	8.5	1.8	6.7	1.42	1.1
FPR #2	3.6	0.1	3.4	1.30	0.5
FPR #3	4.4	0.4	4.0	2.07	0.6
FPR #4	1.1	0.0	1.1	0.16	0.1
FPR #5	1.6	0.0	1.6	0.39	0.2
FPR #6	7.4	0.4	7.0	6.66	1.0
FPR #7	6.6	0.3	6.4	4.03	1.0
FPR #8	3.3	0.2	3.1	0.70	0.5
FPR #9	1.6	0.3	1.3	0.23	0.2
FPR #10	1.0	0.0	1.0	0.22	0.1
FPR #11	4.4	0.9	3.6	1.32	0.8
FPR #12	1.3	0.0	1.3	1.16	0.2
FPR #13	2.6	0.5	2.1	0.42	0.3
FPR #14	2.2	0.0	2.2	1.74	0.3
FPR #15	5.0	0.3	4.8	1.79	0.7
FPR #16	8.6	2.4	6.2	2.36	1.1
FPR #17	2.6	1.0	1.6	0.20	0.3
FPR #18	50.4	6.7	43.7	68.79	6.6
FPR #19	6.9	6.5	0.3	4.84	0.6
FPR #20	5.2	1.0	4.2	1.00	0.7
FPR #21	10.5	0.6	9.9	3.57	1.4
FPR #22	4.0	0.4	3.6	0.31	0.5
FPR #23	9.0	0.6	8.4	7.01	1.2

Material	Total N	N-NH4	Organic N	Solids	FPR #7 Equivalent
12/31/21	lb./1,000 gal				1 load FPR #7 =
FPR #24	6.4	0.7	5.7	6.90	0.8
FPR #25	4.2	0.0	4.2	0.00	0.6
FPR #26	1.4	0.9	0.5	1.40	0.1
FPR #27	0.0	0.0	0.0	0.00	0.0
FPR #28	0.0	0.0	0.0	0.03	0.0
FPR #29	0.0	0.0	0.0	0.03	0.0
FPR #30	2.4	0.0	2.4	0.60	0.3
FPR #31	1.3	0.0	1.3	5.34	0.2
FPR #32	12.3	1.3	11.0	7.84	1.6
FPR #33	0.0	0.0	0.0	0.34	0.0
FPR #34	0.7	0.0	0.7	3.46	0.1
FPR #35	87.5	1.7	85.8	13.01	12.1
FPR #36	9.6	4.4	5.2	0.12	1.1
FPR #37	3.5	0.0	3.5	2.46	0.5