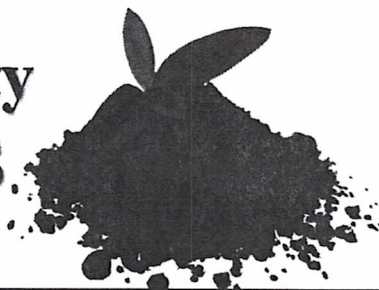


Exceptional Quality Lititz BIOSOLIDS

Natural Crop Enhancer



Agricultural Utilization Information Sheet

What are Exceptional Quality (EQ) Biosolids?

Biosolids are an organic-based, slow-release fertilizer made from the treated and stabilized solids produced during wastewater treatment. As shown in Table 1, biosolids provide nitrogen (N) in a natural form, making it less susceptible to leaching losses and burning than conventional chemical fertilizer. Additionally, biosolids are a valuable source of organic matter.

How are Lititz EQ Biosolids Produced?

Exceptional Quality (EQ) biosolids are produced at the Lititz Wastewater Treatment Plant (WWTP). The Lititz WWTP offers advanced treatment, utilizing aerobic treatment processes and thermal drying for EQ biosolids stabilization. The **LITITZ EQ BIOSOLIDS** have been treated to such a high degree that the most rigorous standards imposed by state and federal regulations are satisfied. Such residuals meet stringent quality criteria relative to trace elements (heavy metals), pathogen destruction, and vector attraction reduction (stability).

Plant Growth and Soil Quality

EQ biosolids are an excellent moderate-grade fertilizing material and a valuable source of organic matter.

<u>Primary Nutrients</u>	<u>2017 Avg</u>	<u>lbs. N / Wet Ton</u>	<u>lbs. PAN / Wet Ton</u>
% Organic N	6.2%	116.2	34.9
% Ammonium N	0.3%	5.7	2.8
% Total phosphate (P ₂ O ₅)	7.6%		
% Total potash (K ₂ O)	0.33%		

Wet Tons (WT) needed to apply 100 lbs. of PAN* = 2.7 WT

<u>Micronutrients</u>	<u>Avg</u>
% Calcium (Ca)	3.0%
% Magnesium (Mg)	1.5%
% Iron (Fe)	0.3%
% Zinc (Zn)	0.15%
% Copper (Cu)	0.06%

*PAN = Plant Available Nitrogen

Benefits Include:

- Improved soil tilth
- Increased soil water holding capacity
- Increased water infiltration
- Increased soil aeration
- Provides slow-release nutrients for plant growth
- Reduced soil surface crusting
- Reduced soil compaction from excessive traffic

Recommendations for Use

LITITZ EQ BIOSOLIDS can be used for the production of agronomic crops, such as corn, hay, or small grains (Table 2). It may be used as a fertilizer for flower gardens, shrubbery, and potted plants. It is an excellent fertilizer for use in the establishment and/or maintenance of turf grass, lawns, and mechanically harvested forage grass. Biosolids may also be used as an agent for blending with other approved residuals.

<u>Planned Crop</u>	<u>Total Crop N Requirement (lb./Ac)</u>	<u>EQ Biosolids Application Rate (Wet Ton/Ac)</u>
Corn, grain	130	3.4
Corn, silage	150	3.9
Alfalfa	250	6.6
Soybean	130	3.4
Wheat/Rye	60	1.6
Grass/Hay	200	5.3

⁽¹⁾ The rates provided do not reflect historic nutrient applications. Specific guidance will be provided to farmers upon request.

EQ Biosolids Application Rates

As shown in Table 3, **LITITZ EQ BIOSOLIDS** contain very low levels of regulated trace elements. As a result, the biosolids N content determines the amount of fertilizer material that may be applied for a particular use or to a farm field and crop. Recent nutrient management programs require some farmers to consider the impact of P fertilizers and manures. Fortunately, EQ biosolids have a lower P availability and less impact on the environment than fertilizers with highly available P.

When biosolids are applied, the Plant Available Nitrogen (PAN) contributed by biosolids must be credited along

with other N sources (e.g., previous legumes, manure, chemical fertilizers, and past biosolids applications, etc.) towards satisfying the crop need. The sum total of all PAN sources must not exceed projected crop N uptake. The application rates will take the N source listed in Table 1 into account.

Characteristics

The chemical and physical properties of *LITITZ EQ BIOSOLIDS* are shown in Table 3. Note that they contain very low levels of trace elements.

**TABLE 3
Typical Characteristics & Accepted Levels
for Trace Elements**

Parameter ⁽¹⁾	Accepted ⁽²⁾ Concentration (mg/kg)	Lititz EQ Biosolids Concentration (mg/kg)
Metals/PCBs:		
Arsenic	41	<4.2
Cadmium	39	1.15
Copper	1,500	606
Lead	300	12.9
Mercury	17	0.77
Molybdenum	n/a	8.1
Nickel	420	8.4
Selenium	100	5.4
Zinc	2,800	1,547
PCBs	4	<0.1
Other Parameters:		
pH	6.5	
Total Solids Content	95% (approx.)	

⁽¹⁾ All values expressed on dry weight basis
⁽²⁾ USEPA and PADEP limits for biosolids

General Agricultural Use Guidelines

Because *LITITZ EQ BIOSOLIDS* meet the PADEP most stringent trace element limits, Class A pathogen, and vector reduction standards, they can be applied anywhere. Like all commercial fertilizer products, *LITITZ EQ BIOSOLIDS* should be used in a way to avoid potential environmental impacts. Therefore, the standard application practices used with any commercial fertilizer are recommended for the application of *EQ BIOSOLIDS*.

Bulk Agricultural Use Applications

It is recommended that farm fields proposed for agricultural utilization of *LITITZ EQ BIOSOLIDS* be managed to reduce the potential for soil erosion (e.g. have an implemented soil conservation plan). Field-by-field nutrient (nitrogen) management accounting should also

be performed to assure that biosolids additions, in combination with other chemical and organic N sources, do not exceed crop N uptake. Additionally, biosolids field application records should be maintained.

Standard practices include limiting use during the following conditions:

- ◆ During or immediately prior to a rain event
- ◆ When ground is saturated, snow covered, or frozen (deeper than 2 inches)

As with any commercial fertilizer, applications of *LITITZ EQ BIOSOLIDS* should be kept away from streams (33' from edge of stream) and should not be applied:

- ◆ In an Exceptional Value Watershed (Title 26 Pa Code Ch.93)

Beneficial Use

LITITZ EQ BIOSOLIDS produced and stored at the WWTP can be transported and applied, or stored and later applied at farms, lawns, residential areas, sports fields, flower and vegetable gardens, and many other applications. Generally, it is suggested that *LITITZ EQ BIOSOLIDS* be covered and stored within designated areas until conditions are suitable for application (within one year). *LITITZ EQ BIOSOLIDS* application rates should be based on the cropping plans of the farmer, land manager, or gardener and the PAN need of the crop to be planted.

Environmental Sustainability

Beneficial use of biosolids has an excellent track record, over a period of more than 40 years. Hundreds of academic and actual field studies, along with the experience of thousands of growers/farmers/producers show that biosolids use provides greater crop yields.

For Additional Information Contact:

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