



WASTEWATER & SOIL SOLUTIONS

The Mannco Story

Mannco Environmental Services, Inc. (MES) was conceived from a belief in the environmental benefits of Class A biosolids and a growing desire for change:

- » **Change in the agricultural industry**
- » **Change in the environment**
- » **Change in municipalities**



Mannco Fertilizer, Inc., the forerunner of MES, was founded in 1998 by Wayne Mannis. It was and is a family-owned business with three generations of agriculture and farm experience. Working also as a crop consultant, Mannco's president, Wayne Mannis, gained a wealth of knowledge about healthy crops and factors affecting crop yield, specifically soil characteristics and fertility. The benefits of biosolids quickly became evident, not only as a soil conditioner and compost, but also as a fertilizer. This was the first endeavor in what became Mannco Fertilizer, Inc. Since that time, Mannco Fertilizer has established the Top Choice Organic™ brand which has enabled us to enter an existing bagged product market exclusive to the home and garden consumer who is looking for organic options.

MES is a business birthed out of three generations of agriculture and farm experience. Working alongside his father and grandfather in the agriculture industry has given MES founder Bradley Mannis the experience needed to recognize the benefits of biosolids in soil fertility. However, he also realized a need for educating their current customers on the benefits of using biosolids fertilizers, as well as creating overall public awareness of biosolids.

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The primary means of accomplishing this objective has been through research. Historically, biosolids did little more than end up in landfills. From an environmental perspective, however, placing sludge or biosolids in a landfill is not a long-term solution. Research, however, continues to show that biosolids are both agronomically and environmentally beneficial. We consistently show soil improvements, increased crop quality and yield through the use of biosolids. It is the desire of MES to encourage and facilitate this research through capital investment.



MES is also an active participant in the Water Environmental Federation. This involvement has allowed MES to build lasting relationships with other successful companies and understand the urgent need municipalities have to dispose of residuals. Properly treated biosolids have an outstanding benefit to the environment and are a green alternative to commercial fertilizers. This is just another reason MES takes pride in its unique position in the marketplace. MES is helping rural and urban companies alike to work toward a greener and more environmentally sustainable tomorrow.

MES has begun partnering with municipalities on multiple levels, including financial support for upgrades, marketing and distribution of biosolids, and consulting agreements. These partnerships have successfully enabled municipalities to make positive and environmentally friendly changes.

Our experience has enabled us to work successfully with startup facilities in West Helena, AR, Louisville, KY, Nashville, TN, and more recently Chicago, IL.

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What Are Biosolids?

All of the waste materials produced by the people and businesses of a city flow into sewers, which route the waste to the city's public waste water treatment plant. The treatment begins with the separation of liquids and solids. Microorganisms are then used to digest the solids, producing a waste product referred to as sludge – a material useful in agricultural applications, but also hazardous to public health because of high levels of pathogens.

Biosolids is the term given to sludge that has been treated to meet EPA standards for beneficial use. It is a nutrient-rich product useful for soil enrichment and its application reduces the need for harsh chemical fertilizers. Recycling biosolids is good for the environment and, when properly applied and managed, can improve soil structure. Biosolids meeting the EPA's Class A standard are totally safe for handling and use in food crops without application restrictions.



Class B

May contain low levels of pathogens, so the timing and type of land application is limited. (For instance, Class B cannot be used on food crops.)

Class A

These biosolids do not have detectable levels of pathogens. With permits, Class A biosolids can be applied to a wide variety of places.

Class A EQ

The toughest criteria are for "Exceptional Quality" biosolids which have lower metal limits and can be applied without federal restriction.

The difference between Class A and Class B biosolids

The treatment of sludge results in either Class B or Class A biosolid. These two classes differ primarily in their pathogen treatment and in their application. A Class B biosolid is the result of primary treatment in the process. It has been through a "digester" where bacteria have had an opportunity to decompose most of the pathogens present. The biosolid is then put in a centrifuge for dewatering; however, it is still wet. It can be applied to land, but is not usable for soil where crops are grown for human consumption. The main applications for Class B solids are mine reclamation where they regenerate the soil later and also in forests where they promote rapid timber growth.

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The final stage of the treatment produces a Class A, or Exceptional Quality Biosolid, which through the process of heat drying, has no detectable levels of pathogens. Class A biosolids are tiny pellets, usable in small amounts by the general public with no restrictions. They can also be used by farmers in crop soil applications without crop harvesting restrictions.

The benefits of Class A biosolids

Recycling Class A biosolids is good for the environment and, when properly applied and managed, can provide essential plant nutrients, improve soil structure and crop-growth suitability, add organic matter, enhance moisture retention and reduce soil erosion.



Class A biosolids enrich the soil with essential nutrients and organic matter. They contain a full range of essential plant nutrients released slowly, as the plants need them during the growing season. Their agricultural use, that meets strict quality criteria and application rates, has been shown to produce significant improvements in crop growth and yield. Nutrients found in Class A biosolids such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The organic matter acts as a sponge for water, nutrients and air where soil organisms can prosper and plant roots can develop better. The result is improved crop production, less water runoff, less soil erosion and increased water conservation.

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