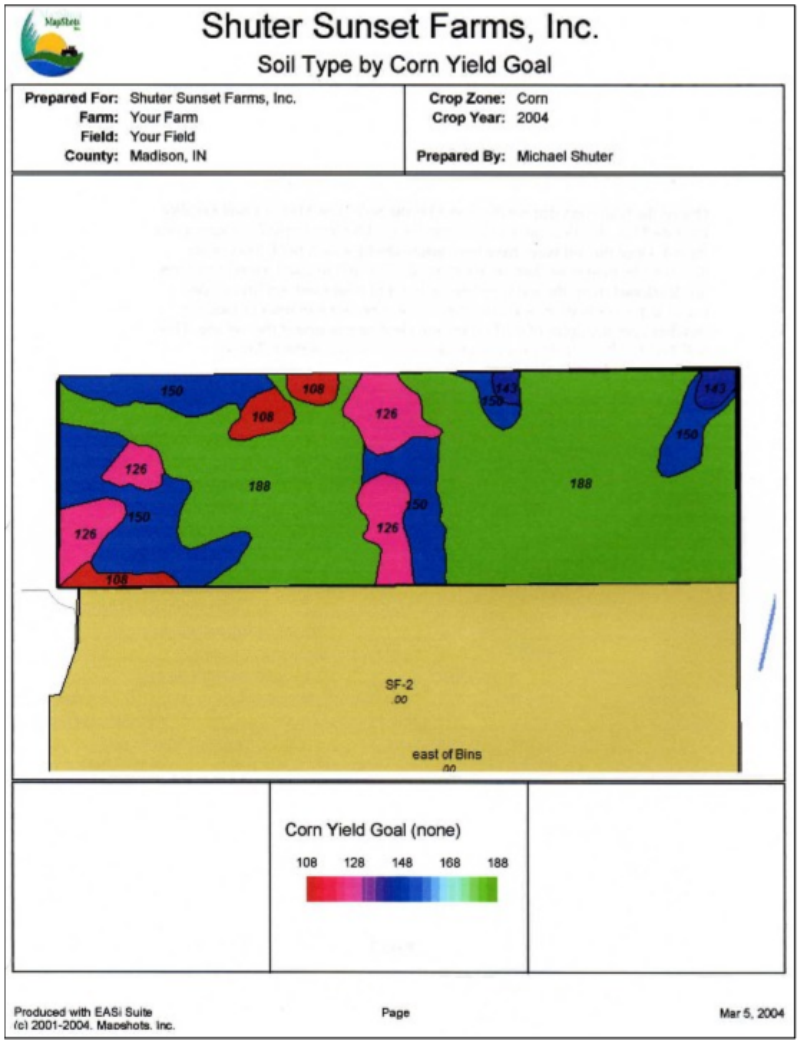
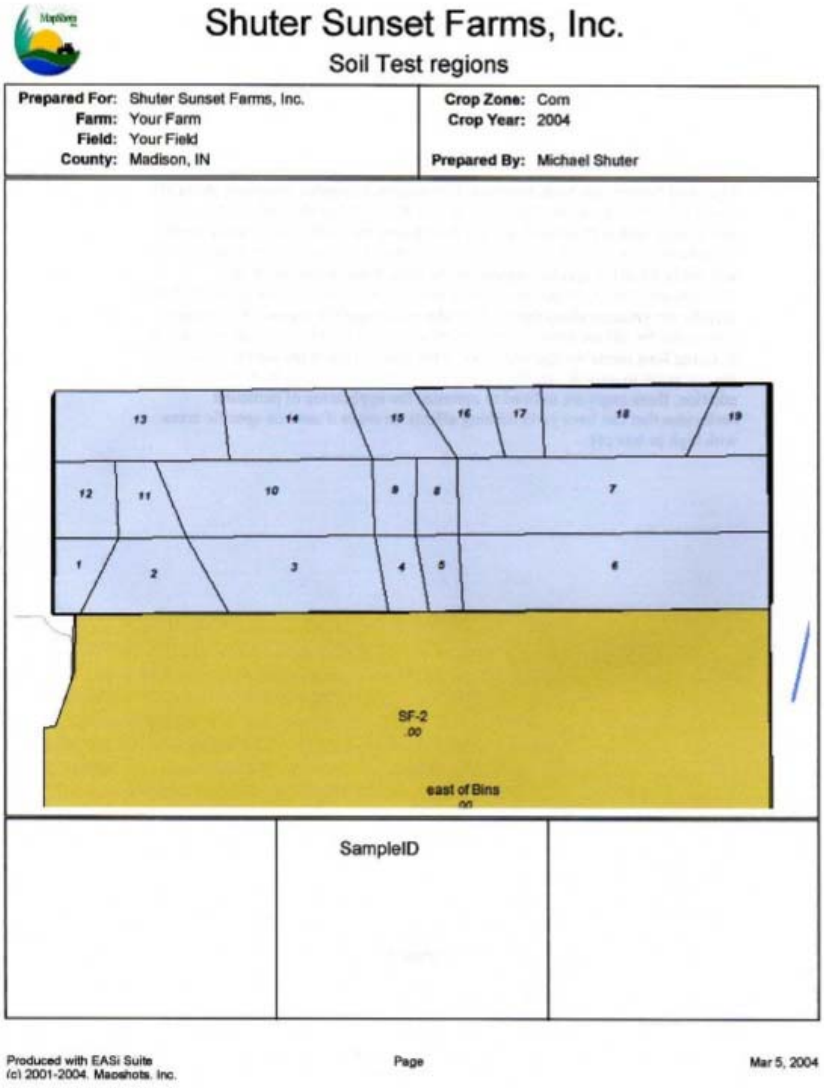
Shuter Sunset Farms, Inc.
Site Specific Management using GPS (Global Positioning)

Map #1 pictures a “Soil Type by Corn Yield Goal” map for the 80 acre field. Soil types contained within this tract of land provide the basis for other maps, which follow and are used to control the inputs that go into this field. Previous research clearly indicates that different soils have different yield potentials. Because of this factor the optimum profit potential for different soils can be obtained using different input levels for different soil test levels.

The different soil types shown on map #1 are represented by different colors, which indicate different corn yield potentials. This soil map is used to develop a much more extensive Soil Test Sites map in order to more aggressively manage the different types of soil found in this field. For example, good management practices suggest it does not make economic sense to fertilize a lower yield potential soil beyond the point it is capable of producing. It is important to note there may be soil test areas of less than an acre or others of more than five areas depending on the various soil types in a specific tract of land.

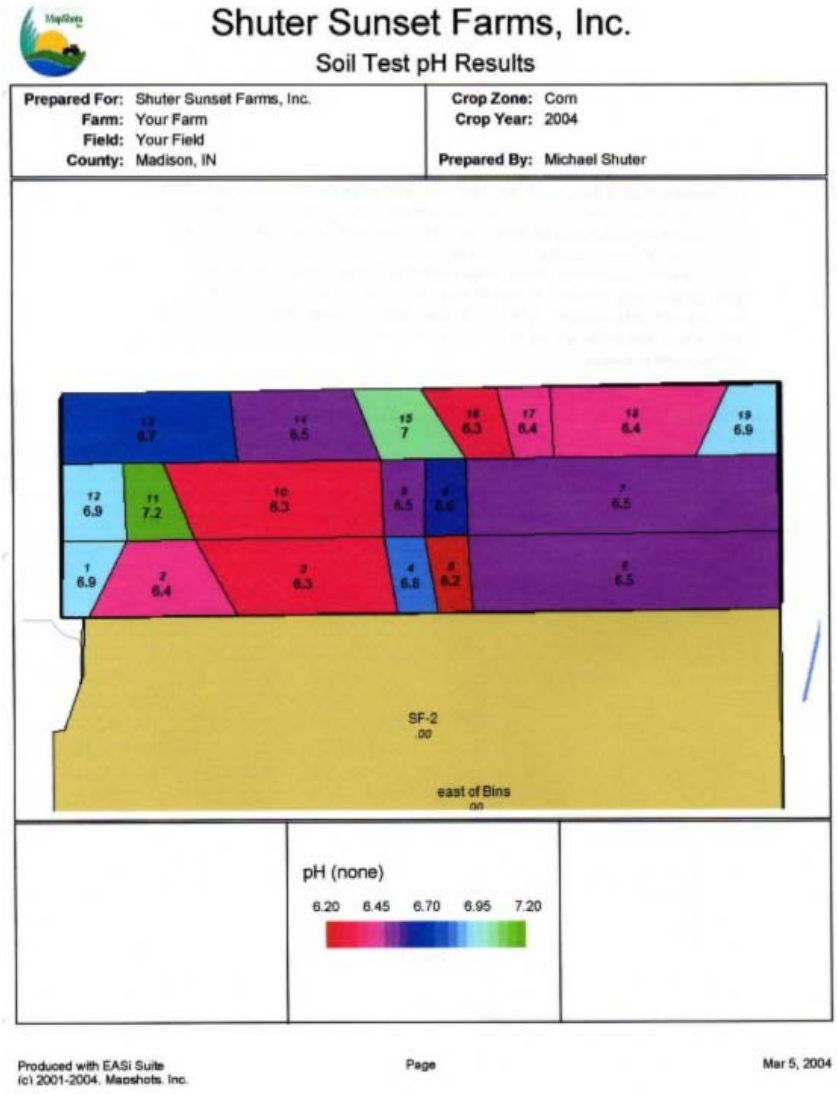


One of the first maps that we develop after the Soil Type Map is a Soil Fertility Regions Map. An illustration of this map for the 80 acre sample field appears as map #2. Once the soil types have been established for each field, lines in the direction the field is worked are established every 360 feet and transecting lines are developed using the soil type lines in order to create soil fertility regions useful in the application of fertilizer and lime. The 360 foot units of measure matches even multiples of application and planting equipment that we use. This Soil Fertility Regions Map becomes the basis for many of the following application and production maps.

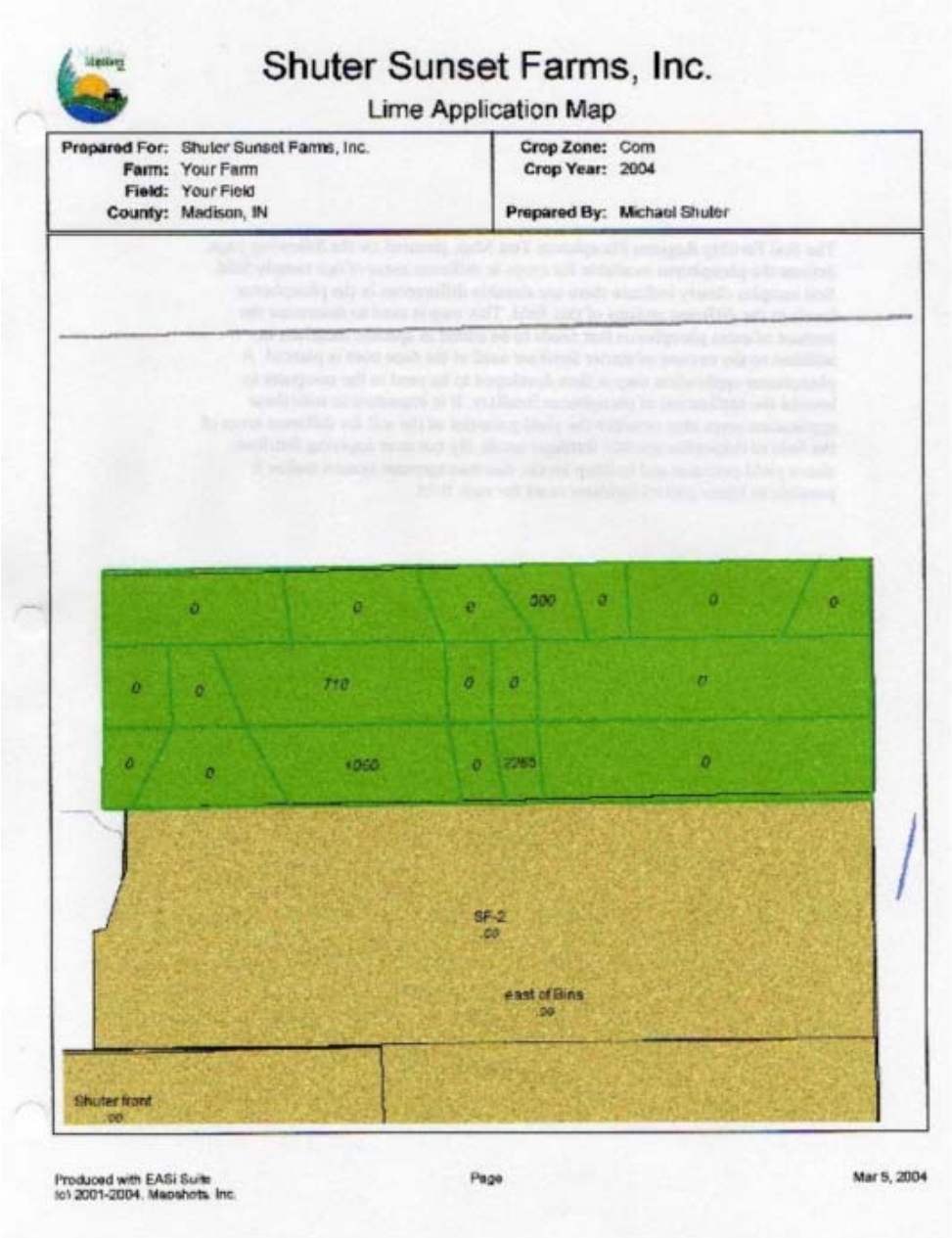


Once soil fertility has been determined through soil samples, questions about pH levels for each region can be addressed. The Soil Fertility Regions pH Map for our sample field is illustrated as Map #3. Utilizing the GSP system, soil samples were taken from 19 separate sites which provided a much more accurate view of soil needs for pH in specific regions of the field. Prior to the use of this management tool, a composite of 2 to 4 samples were taken which gave much less specific information about the needs of the soil in specific regions. Soil sample test results for pH are used in conjunction with a buffer pH map to determine the differing lime needs for specific areas of the filed. These

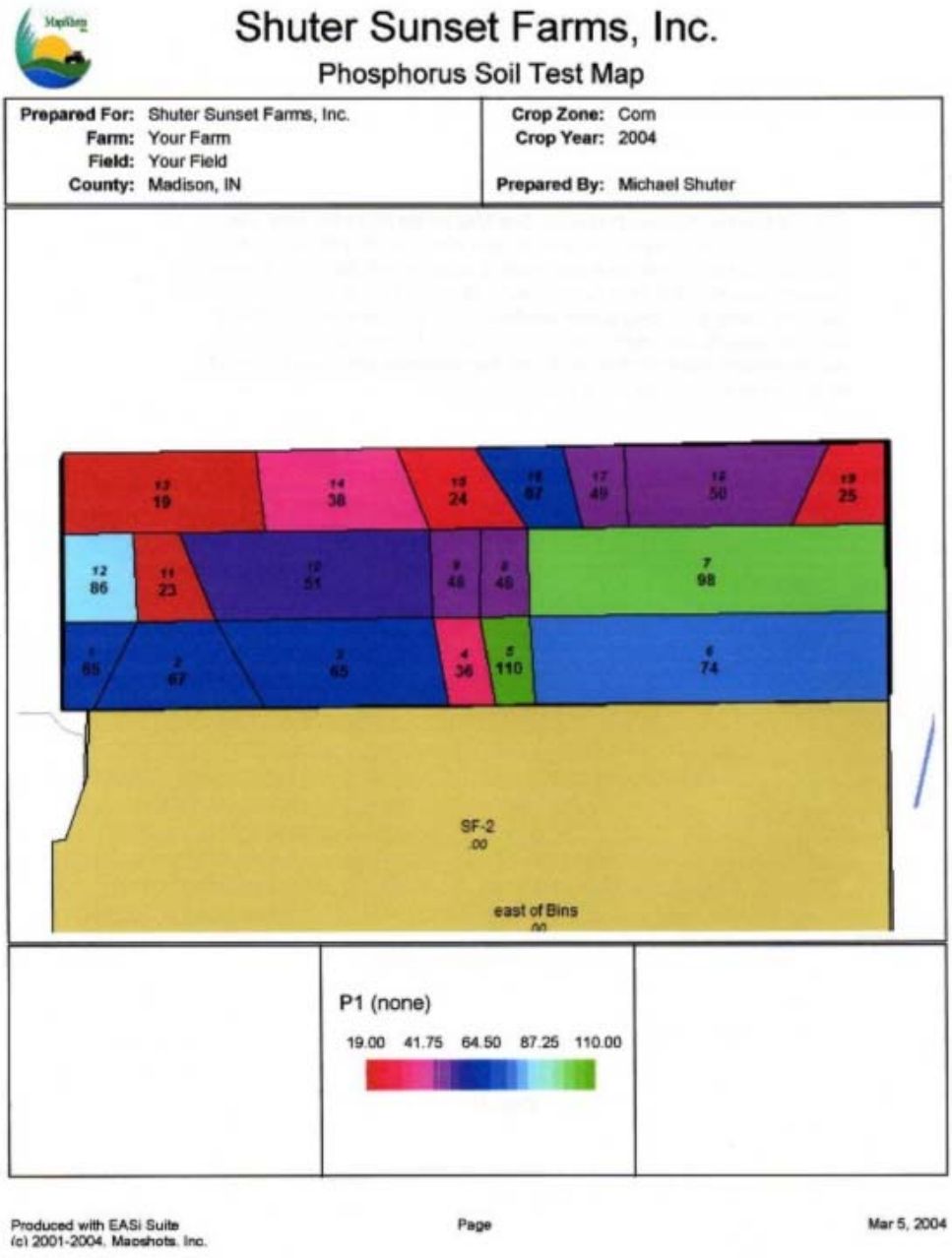
maps are then used with the computer to provide quality control in the variable rate application of lime. In addition, these maps are utilized to optimize the application of particular herbicides that can have yield robbing affects on crops if used on specific areas with high or low pH.



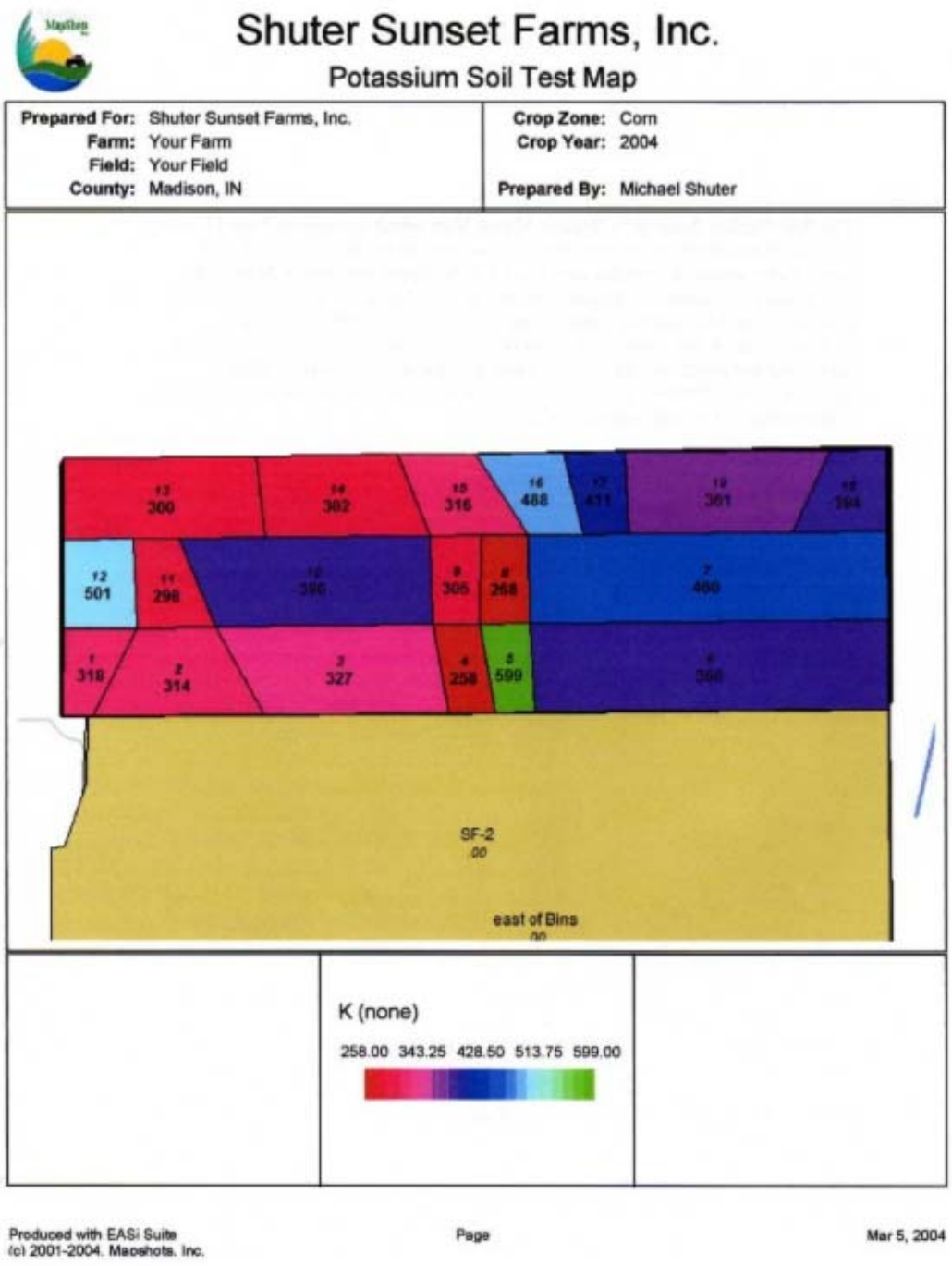
Map #4 depicts a Lime Application Map for our 80-acre sample field. This map was developed by using soil test results from the previous pH map and results from the soil buffer pH test map. The Lime Application Map, illustrated here, is loaded into a computer, which is connected to the Global Positioning Receiver in the applicator, which in turn controls the application rate of our fertilizer and lime spreader. Shuter Sunset Farms purchased its own Big A fertilizer and lime spreader in 2000 to better control the cost of the fertilizers and lime, which was being spread. Production results validate the wisdom of these management practices.



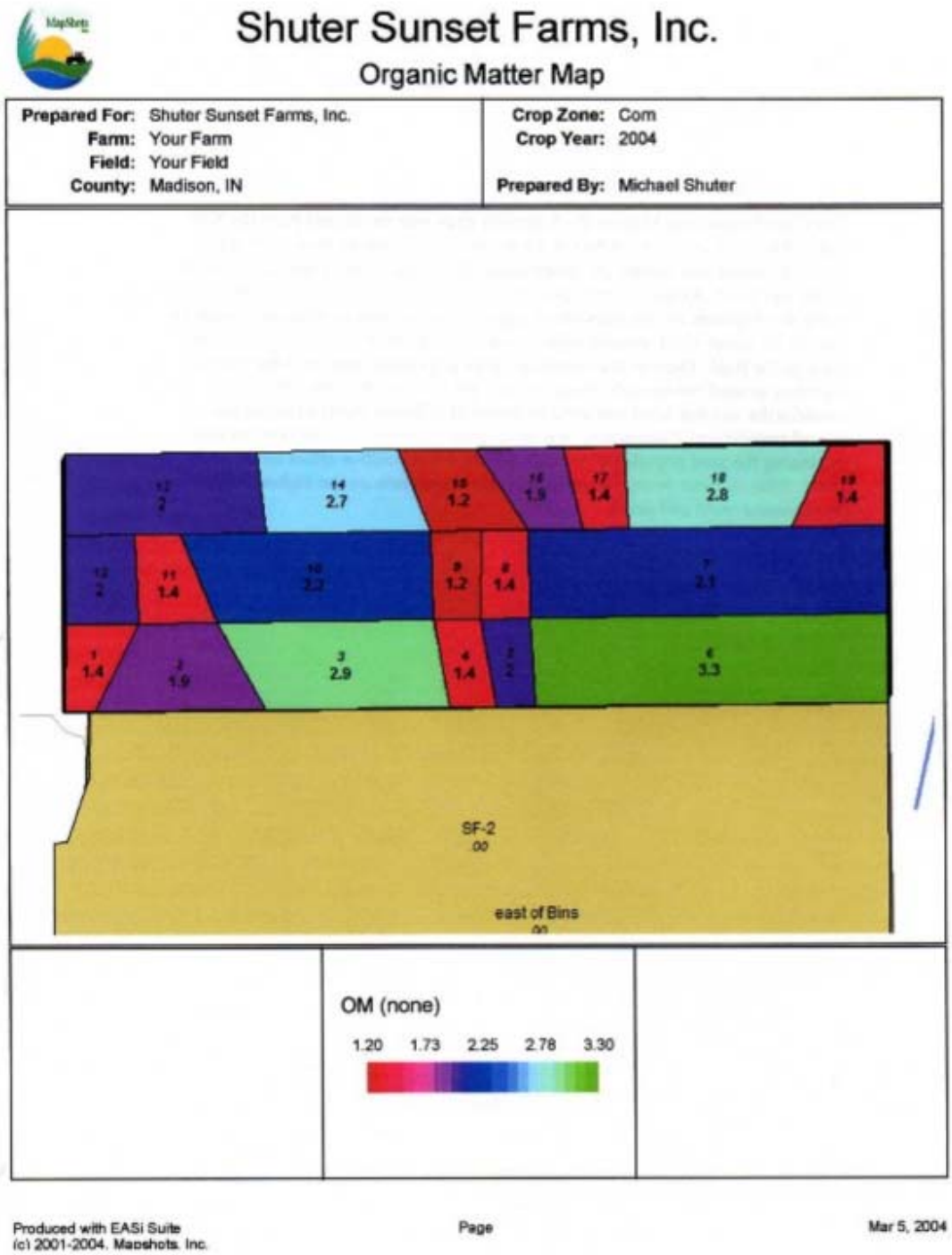
The Soil Fertility Regions Phosphorus Test Map, pictured below, defines the phosphorus available for crops in different areas of our sample field. Soil samples clearly indicate there are sizeable differences in the phosphorus levels in the different regions of this field. This map is used to determine the amount of extra phosphorus that needs to be added in specific locations in addition to the amount of starter fertilizer used at the time corn is planted. A phosphorus application map is then developed to be used in the computer to control the application of phosphorus fertilizer. It is important to note these application maps also consider the yield potential of the soil for different areas of the field to determine specific fertilizer needs. By not over applying fertilizer above yield potential and buildup levels, this management system makes it possible to better control fertilizer costs for each field.



The Soil Fertility Regions Potassium Test Map below was developed from the potassium results of the soil test. In the past we have found that lower darker soils are in greater need of added potash fertilizer. This map in conjunction with a Soil Exchange Capacity Map is used to develop the spreader application map for adding potash fertilizer to the soil. By using the smaller sampling areas defined earlier, we are able to enrich those areas that need enrichment and maintain those areas that have adequate fertility, all of which helps control the fertilizer dollars spent on a field.

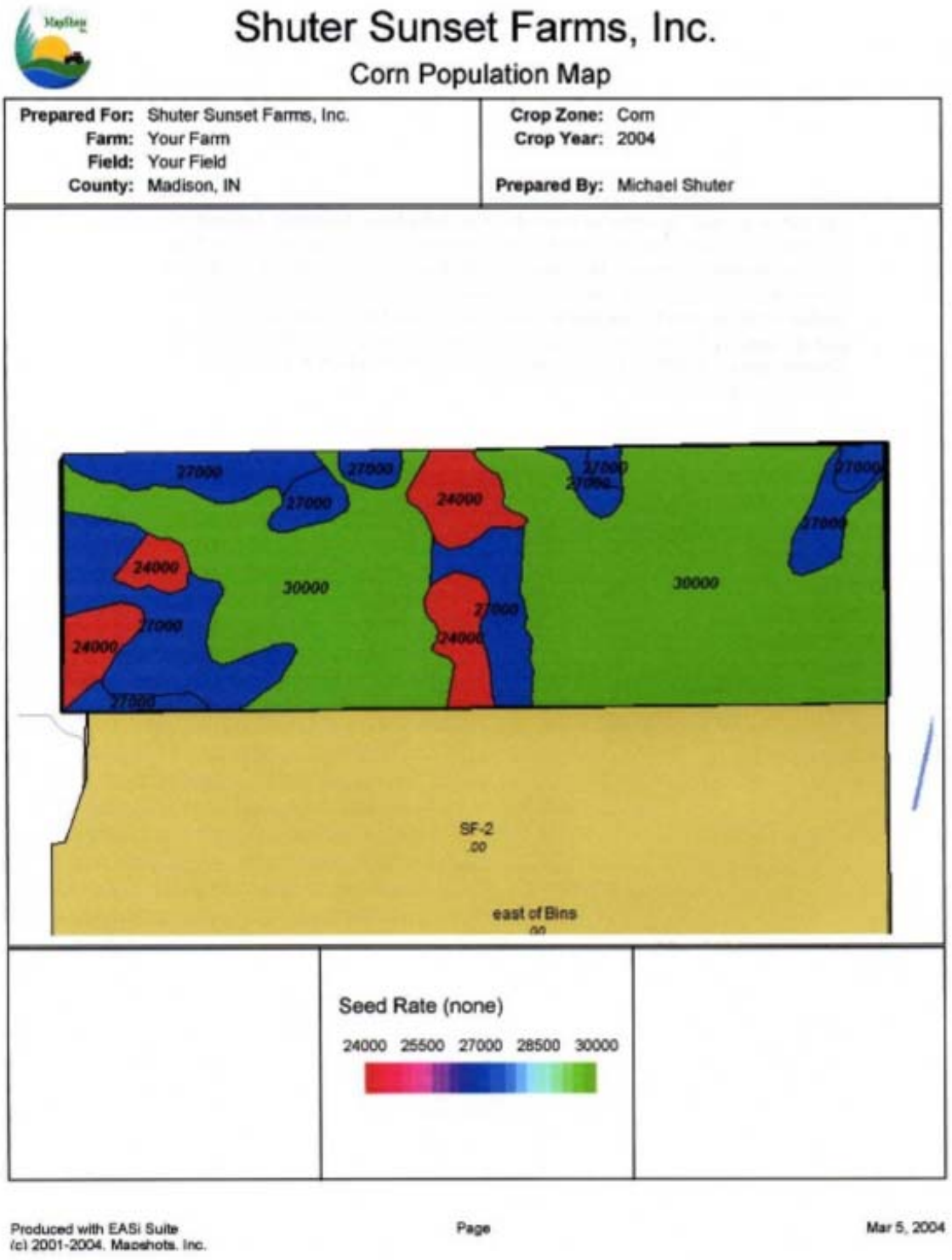


The Soil Fertility Regions % Organic Matter Map, which appears below, was also developed from the soil test results. This map can be used in a number of ways. For example, it provides the basis for a Herbicide Application Map if the rate of herbicide applied is organic matter sensitive. Many of the new soil applied herbicides are rate-sensitive based on the level of organic matter in the soil. Therefore, use of information from this type of map can have a positive affect on crop yield and profit. In addition, this map also indicates the water holding capacity of the different types of soils found in this tract of land which has a direct relationship to corn and soybean yields.

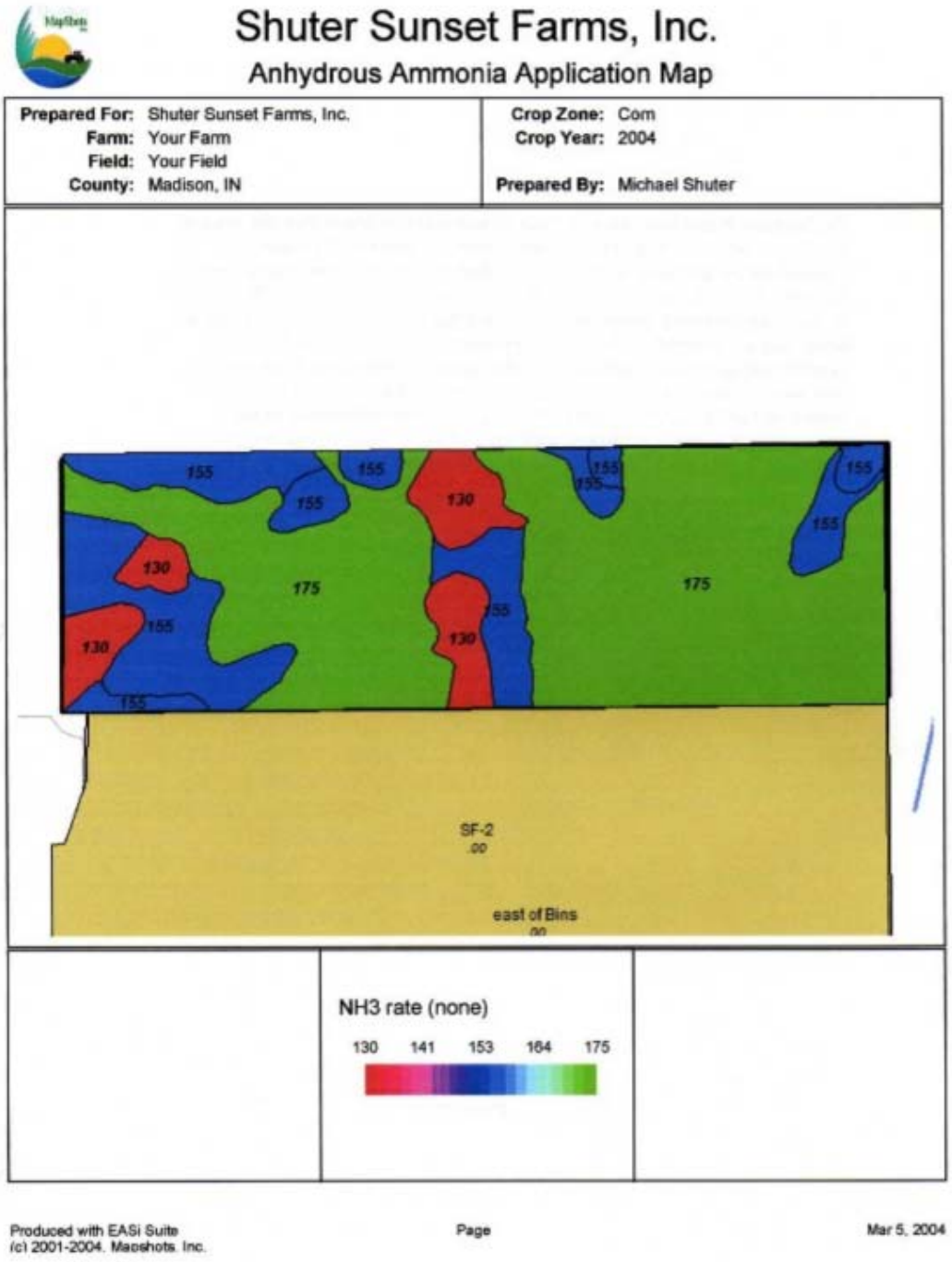


The Corn Populations Map below was developed from the Soil Type Map (Map #1). Shuter Sunset Farms has been involved with a national research project that studies the relationship of corn population and soil types to yields and profit. Research findings from these studies provided information used in the development of this map which suggests higher seed populations should be used in the lower black ground while lower populations are used on the red clay areas of the field. There is also a middle range population used on what we call the white ground between the black ground and the red clay areas. We also consider the soil test level and yield potential of different fields to

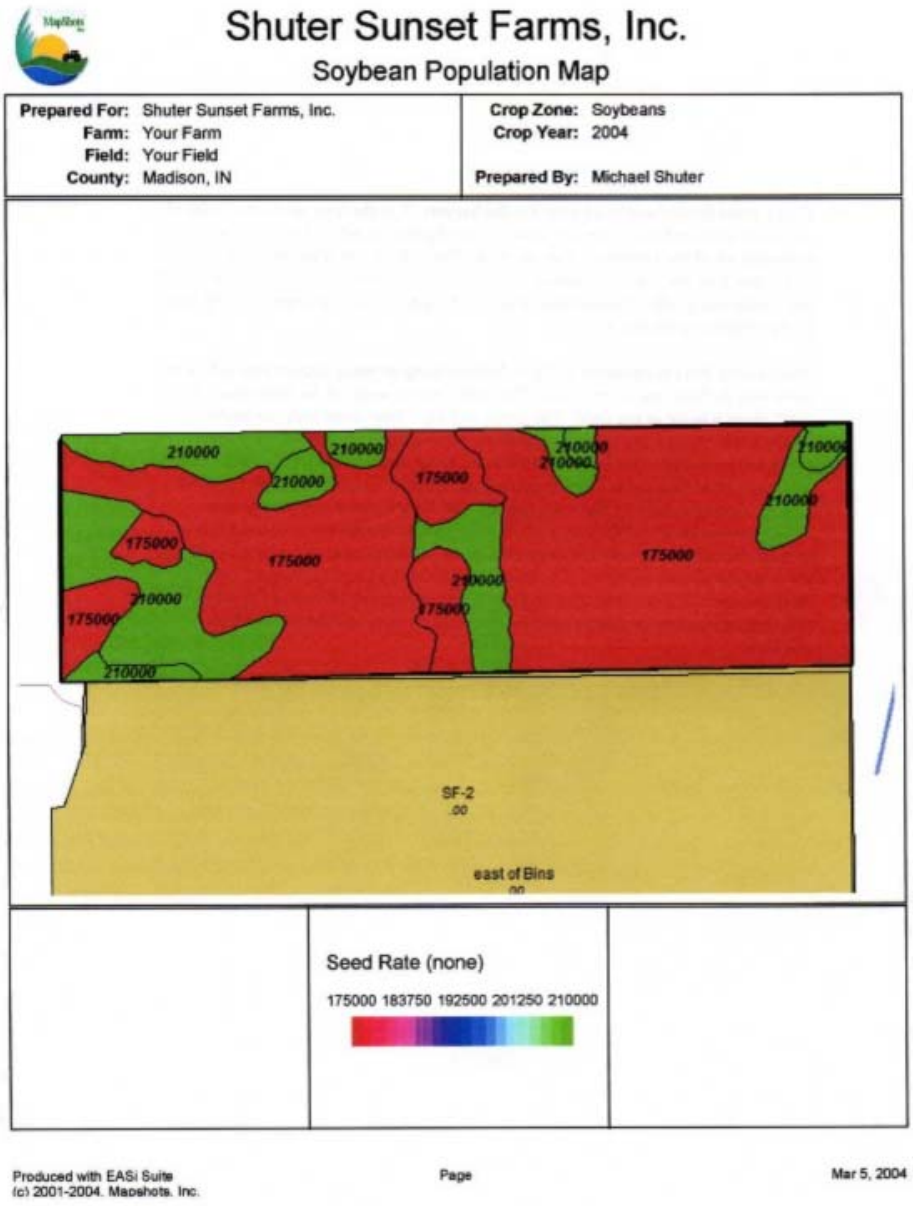
adjust the overall populations if necessary. We have found in many years of farming that increasing the seed population in black ground has a positive affect on yield and profit. Also, in most years, reducing the plant population on the higher ground can also increase yield and profit.



The following map provides an example of an Anhydrous Ammonia Application Rate Map. This map was developed from the same soil type map used in creating the corn populations map on the previous page. Increased corn populations have a greater need for nitrogen so this map illustrates how higher rates of nitrogen are applied to those areas having higher seed populations. Through the use of this map in conjunction with the computer we are able to carefully control the rate of nitrogen applied to different soil types found in this field which has a positive affect on yield and profit.



The Soybean Populations Map below was also developed from the original Soil Type Map. This map indicates that soybean populations are easier to establish on the dark soils and the red clay high ground soils when using our no-till method of farming. For example, we have seen yields increase on dark ground by reducing the seed populations. This occurs due to increased air circulation and better sunlight penetration through the soybean canopy. It is more difficult to establish adequate seed populations on the lighter or white ground between the dark and red clay areas. As a result, we add more seed to the white ground in order to obtain the optimum stand. This map file, when transferred to the computer in the tractor and linked with our 30-foot no-till drill, makes it possible to accurately vary the seeding rates in the different fertility areas of the field.



Every grain farmer works all year for the harvest. It is the time when the fruits of our labor and wisdom of our decisions come together to tell us how well we have managed all of the variables of production. The Corn Yield Map, which follows, illustrates how the use of technology and good farming practices blend to enhance our yields and profit. Through use of the GPS system this map depicts every pass of the combine over this field.

Throughout this presentation we have been looking at many factors that affect the yield and profitability of this field. The colors on the map are an indication of the yield at each point in the field. The green and light blue areas indicate higher yields while the red and brown areas show somewhat lower yields. This map gives us the ability to look at the yield in different areas of the field and determine how our controlled inputs have improved production. In addition to all the other factors, through study of this map, we can also locate possible drainage and compaction problems. Decisions can then be made whether the problems are serious enough and the area is large enough to warrant corrective actions such as the addition of drainage tiles. As you can see from this map, there are clear indicators of how soil types, the controlled addition of fertilizers, and land management relate directly to increased yields and the profitability of this field.