Bahiagrass is a widely used industrial turfgrass that performs well in a wide variety of environments. Its resistance to drought, disease, and various insect pests has led to wide-spread usage along Florida rights-of-ways. However, bahiagrass continually produces seedheads from late May through September. These seedheads can reach 3 feet in height and impair vision along the right-of-way if not mowed frequently. In Florida, the hot and rainy summer months can require these roadsides to be mowed 7 to 12 times per year—relative to location and desired level of maintenance.

To reduce the necessity of regular mowing, plant growth regulators have been used for many years. In the early 1990’s, the use of sulfometuron (Oust), hexazinone (Velpar), and glyphosate (Roundup) were commonly used. These products, though effective, were relatively unforgiving. It was common for these products to cause prolonged yellowing/browning or thinning of the turf. For this reason, many operation units have discontinued the use of all “growth regulators”. But since this time, other products have been developed that will inhibit the formation of seedheads and reduce the need for regular mowing. The product most commonly used for bahiagrass seedhead suppression is imazapic (sold as Plateau, Impose, and Panoramic). This product, applied at 2 to 4 fl. oz/A, has been shown to effectively reduce bahiagrass seedheads for 8 to 16 weeks after application (Figure 1).

**How does imazapic work?**
Imazapic reduces bahiagrass growth by shortening the distance between plant nodes. The affected plant does not stop growing, photosynthesis is not reduced. When sprayed with imazapic, bahiagrass stems simply do not elongate as they characteristically do (Figure 2).

**How is imazapic applied?**
Imazapic is a product that has both leaf and soil activity. However, for bahiagrass growth reduction, this product works best when applied as a foliar spray. Diluting the proper amount of imazapic in water and then spraying that dilute solution at a rate of 15 to 20 gallons per acre has been shown to be a highly effective way to deliver imazapic on highway rights-of-ways.

**What is the appearance of bahiagrass after imazapic application?**
Bahiagrass responds to imazapic by simply ceasing to grow. Leaf growth is curtailed, but seedhead production is profoundly reduced. Generally, the grass maintains a green color and continues to look as if it were recently mowed.

It is possible for imazapic to injure bahiagrass. If applications
are made during a period of drought stress, the bahiagrass may turn a yellow/green color for 2-3 weeks following application. This same yellowing can also be observed if imazapic is applied to an area that has been repeatedly scalped by mowing and the turf is stressed due to improper mowing height. It is important to apply imazapic to turf that is healthy and actively growing. Another important factor is to ensure that sprayer is properly calibrated. Healthy bahiagrass can easily tolerate this product when applied at 2 – 4 fl. oz/A. But a misapplication of 6 or 8 fl. oz/A are much more likely to result in prolonged yellowing or stand reduction. It is important to calibrate equipment carefully and apply imazapic accurately.

Is imazapic harmful to the applicator or the environment?
The toxicity of imazapic is extremely low. When comparing the oral LD₅₀ (a measure of toxicity), gram per gram, imazapic is less harmful to humans than table salt. For this reason, the personal protective equipment required by the product label is long sleeves, pants, shoes, and gloves. No respirator, face shields, or chemical resistant clothing is required.

Additionally, imazapic has not been found to leach to groundwater or pose a risk to run into surface water. This product should not be applied directly to water, but spraying near water poses little risk. This herbicide also has a 0 day grazing restriction for all animals. So if imazapic is inadvertently sprayed across a fence into a pasture, there is no risk of harm to the animals residing on that pasture.

Cost savings
Since imazapic halts bahiagrass growth, the need for regular mowing is greatly reduced. Experiments have shown that 2 to 4 months of growth reduction, relative to environmental conditions and application rate, can be achieved with this product. Municipalities that have used this product have shown savings, resulting from mowing reduction, to be between 25% and 50% of the total right-of-way maintenance budget. A 25% saving will be relatively easy to achieve with a low-intensity imazapic program while reaching 50% will require considerable expertise. Regardless, cost savings are commonly realized if imazapic is incorporated into the right-of-way program.

Hidden savings can also be recouped. By reducing mowing, you not only save fuel and equipment cost, but also have the opportunity to reallocate resources since personnel are no longer dedicated solely to the mowing operation. The personnel reallocation can likely have the greatest impact since it is the equivalent of adding additional persons to the operation crew.

Case Study—Hillsborough County, FL
2005—6 mowing cycles, no growth regulator applied, at a cost of $2.3 million

2007—2 mowing cycles ($780,000) and 2 growth regulator + herbicide applications ($455,000) for a total of $1.2 million.

Annual Cost savings: $1.1 million

Conclusion
It should be reiterated that an imazapic-based growth reduction program is not perfect. There will likely be application mistakes, equipment malfunctions, or complaints from the spraying activities. But by starting slow and learning the particulars of this program, many of these problems can be met, corrected, and avoided. By building a strong growth regulator program, it is possible to save mowing cost, increase highway visibility, and result in an enhanced right-of-way.