

# The Scoop

on horticulture



## Plant Growth Regulators



Jasmine – both hedges trimmed 3 weeks prior. Top photo shows untreated, bottom photo shows 2 Atrimmec treatments.



Eugenia – both hedges trimmed 2-3 weeks prior. Top photo is untreated and bottom photo is after 2 Atrimmec treatments.

In today's competitive landscaping industry, every company is looking for the *one additional edge* that may push them to the pinnacle of successful bidding and operations. One particular item, which has been used for decades, may just be the edge needed if utilized to its potential. Plant Growth Regulators, when used correctly and diligently, can provide the necessary edge to battle excessive growth which will equate to substantial savings in the following areas:

- Labor – Less trimming → Less clean-up
- Travel time – Fewer trips to the property for trimming are made, and this will result in fewer trips to dispose of the material.
- Safety – If less trimming is needed, there should be fewer trimming-related accidents. In addition, when travel time is down, there are fewer chances for automobile related accidents.

### DEFINITION

Plant Growth Regulators are defined as any chemical used to alter the growth of a plant or its parts, but not including chemicals used for plant nutrients. According to the American Society for Horticultural Science, there are 6 major classes of PGRs. These major classes include:

- Auxins (shoot elongation)
- Gibberellins (stimulate cell division and elongation)
- Cytokinins (stimulate cell division)
- Ethylene Generators (ripening)
- Growth inhibitors (stops growth)
- Growth retardants (slows growth)

In our realm of landscape maintenance, and for the purpose of this article, we are concerned with the latter two.



Plumbago – both hedges trimmed 4 weeks prior. Top photo shows untreated, bottom photo shows 2 Atrimmec treatments.



## BENEFITS

The most obvious benefit to using Plant Growth Regulators is the savings in labor and other associated costs that are mentioned above. However, there are other beneficial side effects that are not monetary in nature.

One additional benefit to using a PGR is the type of growth pattern that can be achieved when applied correctly. Some types of PGRs will actually inhibit meristematic growth while stimulating lateral growth on the interior of the plant. This effect will create a full, but compact, plant growth habit. According to PBI Gordon, there have been recent tests with using this type of chemical to help storm or insect damaged material achieve a fuller look faster.

Some PGRs also encourage greater flower production, and some believe, an enhanced root system. A growth inhibitor will shorten internodes on the stems of the plant material which promotes flower production in some species. This is widely seen in Bougainvilleas and some Jasmine sp. treated with a growth inhibitor.

## PRODUCTS

There are several Plant Growth Regulator products out on the market, but we specifically use about 3 or 4 of those.

■ **Atrimmec**, (active ingredient, dikegulac sodium) is a growth inhibitor, widely used to manage growth in ornamental plants. It stops apical growth and promotes lateral growth, which results in fuller and more compact plants with an increased number of flowers.

- Duranta
- Bougainvillea
- Jasmine
- Eugenia
- Podocarpus
- Elaeagnus
- Thryallis
- Firebush
- Plumbago

Each plant has a specific rate of mixture that should be adhered to in order to prevent burning. Most plants should be treated at a rate of 1-3 ounces of Atrimmec per gallon of water. It is recommended to add approximately 1 oz per gallon of water of a non-staining micronutrient product (Agriplex) to the mixture. It is important to note that the rates on the label are only approximations, and can vary widely. Species specific trials should be performed before a broad application.

The label states that 1 application should be sufficient to control growth for an entire season with the exception of areas with an extended growing season. In south Florida, we have found that some of the more aggressive plant species react favorably to successive applications of Atrimmec. These re-treatments should be 5-6 weeks apart for best results.

■ **Bonzi**, (active ingredient, paclobutrazol) is a growth retardant, commonly used to treat annual bedding flowers and some woody plants. This product works to reduce internode elongation creating more compact plants.

Target specimens generally include:

- Coleus
- Impatiens
- Celosia
- Petunia
- Snapdragon
- Zinnia
- Hibiscus
- Bougainvillea
- Azalea

The Bonzi label gives recommended trial rates by general plant type. Therefore, testing is required before a broad spray application. Spray application rates can vary from 1 ounce of product per gallon of water for bedding plants up to 3.2 ounces per gallon of water for more woody species.

Plants treated with Bonzi also respond well to successive treatments. This will help to promote a more uniform growth regulation. Sequential applications will also help to eliminate the individual lateral shoots missed by the first treatment.

■ **Embark**, (active ingredient, mefluidide) is a growth retardant most commonly used to slow growth of turfgrass and some ornamental plant material.

While this product is labeled for both turfgrass and ornamentals, we generally use it to curb growth in St. Augustine at a rate of 2/5 fl. oz. per 1000 square feet. Both herbicides and fertilizer can be combined with Embark. The most profitable use of Embark that we have found is turf banding because of the product's affect on lateral growth of turfgrass. Turf banding is the process of spraying a six inch band of mixed solution around areas that need string-trimming or edging. This application method can help to eliminate edging and some string trimming for a period of up to 6 weeks. Embark can be applied every 6 weeks during the active growing season.

■ **Primo Maxx**, (active ingredient, trinexapac-ethyl) is currently an unclassified plant growth regulator used to reduce vertical growth in turfgrass.

Primo Maxx can be used on a large variety of turf types including, but not limited to:

- St. Augustine at a rate 4.5-6.5 ounces per acre
- Bermuda at a rate of 9-33 ounces depending upon variety
- Zoysia at a rate of 11 ounces per acre
- Bahia at a rate of 44 ounces per acre

This particular product is particularly useful for controlling growth in hard-to-access areas. Not only will Primo Maxx reduce mowing, edging, and string trimming, the label states that it will improve quality, color, and density of turf with repeat usage. Primo Maxx is also credited with improving root systems in turfgrass treated regularly. As less energy is put into vertical growth, more energy is redirected down to the roots. In addition, a smaller blade surface translates to less transpiration and more water savings. Primo Maxx will not affect weed growth, so it is imperative that turf be weed free prior to application for best results.

#### **Techniques:**

Timing, application method, and environmental factors will all play a role in the effectiveness of Plant Growth Regulators. It is important to consider all of these aspects in order to prevent wasting time and resources.

#### **Timing:**

- Application of PGRs should begin in the spring or at the start of the true growing season.
- For best results, plants should be well rooted, actively growing, and not under stress from nutritional or irrigation deficiencies.
- Plant material should be trimmed to desired shape 3 days to a week prior to Atrimmec application. Trimming after the application will be a waste of labor and product because of the chemical's mode of action. Atrimmec is absorbed by the leaves and then translocated to the shoot tips.
- However, when using Embark or Primo Maxx, mowing activities can be performed either before or after application occurs.

#### **Method of application**

- The above mentioned chemicals are all foliar applications. Plant material should be sprayed just to the dripping off point to achieve best results.
- Consistent coverage is essential to ensure even growth regulator results.
- It is important to remember that the amount of water needed to achieve a uniform application may depend upon they type of equipment used.

#### **Environmental Factors**

- Depending upon the specific product, the time of day for the application may be important. For example, Atrimmec cannot be applied during the heat of the day, or else it will damage the foliage. However, Bonzi can be applied at any time with no risk of burn.
- Read the label to determine the amount of time for the product to become rain or irrigation safe, as it can vary from product to product.
- Make sure that the plant's water needs are being met, either through rain or irrigation, to ensure a healthy plant.

#### **Problems associated with PGRs:**

With all PGRs there is some risk of yellowing and discoloration. This is not necessarily a sign of incorrect application, as some species are simply more sensitive. This discoloration is generally short-lived, and will push back within a few weeks. This is especially true when using Atrimmec and Embark. There is less instance of yellowing from a correct application of Bonzi and Primo Maxx.

PGRs can create undesirable effects if label rates are not followed. Some symptoms of PGR overdose include, over-stunting of entire plant, leaf stunting, stem die-back, and plant death.