

ance. The hoped advantages of growth regulators are:

- Reducing growth—especially sprout growth—following extensive trimming. This extends the trimming cycle which leads to reduced maintenance expenses.
- Reducing the amount of wound-

ing due to repeated trimming. It is estimated that the average tree trim exposes about 400 sq. in. of cut surface. This stresses the tree due to the energy needed to heal this area, and it exposes a large area to disease organisms.

- Improving stress resistance by re-

ducing surface area exposed to water loss and reducing the energy wasted on excess regrowth.

- Allowing normally large trees to be planted in smaller spaces. In many cases the appearance of the tree is improved by using a growth regulator. That's due to a reduction in sprout

## PGRs: a tool to manage mowing

It may seem that the ideal growth regulator would stop growth completely, making mowing unnecessary. But that is an unrealistic expectation. Turfgrasses are constantly subjected to environmental stresses such as traffic, disease, insects and pollution. The only way grasses have to repair the damage from these stresses is by growing and replacing the damaged shoots. Therefore, some growth must be allowed.

Growth regulators should be thought of as a tool to help manage the mowing schedule, not to replace mowing completely.

There are two major potential uses for growth regulators in turf maintenance. One is control of low-maintenance, low-quality turf such as along roadsides, steep slopes, fencerows, ditches, and stream banks. The second is in difficult-to-mow areas of higher quality turf.

Another possible use is on more formal, high-quality turf where mowing is continued, but a growth regulator is applied at a low rate to reduce some mowing. Currently, this application for growth regulators is highly limited, probably because most lawns are exposed to injury by foot traffic and that growth is needed in order for the grass to rejuvenate itself.

### Types of PGRs

The greatest potential use of turfgrass growth regulators for general landscape management is for difficult-to-mow areas such as steep slopes, along fences, or around obstacles.

Some specific characteristics of turfgrass growth regulators are as follows:

- Maleic hydrazide (Royal Slo-Gro, Drexal Retard): first growth regulator available for turf; for cool-season grasses only; inhibits growth by suppressing cell division in the shoots, roots, and buds; suppresses root and rhizome development; seedhead formation inhibited if application is timed properly; best application time is in spring when



Difficult-to-mow areas such as steep slopes may be ideal sites to use growth regulators.

forsythia and dandelions are in full bloom; use limited to low maintenance areas due to possible phytotoxicity and excessive growth inhibition; not recommended for home lawns except possibly for edge treatments along walls and around trees.

- Mefluidide (Embark): newer growth regulator for both cool- and warm-season grasses; considered a standard of the industry for grass control; suppresses vegetative growth and seedhead production in plant areas; may be used to arrest seedhead development of *Poa annua*; not readily translocated; does not restrict roots and rhizomes low phytotoxicity potential; good product for general landscape maintenance work; should still be considered for use only on low-maintenance, hard-to-mow and trim areas.

- Amidochlor (Limit): cool-season grasses only; suppresses shoot growth, inhibits seedhead formation; needs rainfall or irrigation within three to five days of application; does not suppress root development; features low phytotoxicity and tolerance of application overlap.

- EPTC (Shortstop): new growth regulator recommended for tall fescue; can cause severe phytotoxicity on finer turfs; root-absorbed; suppresses both shoot growth and seedhead formation; also provides some broad-leaf weed suppression.

- Chlorflurenol (Maintain CF-125): cool-season grasses; suppresses shoot growth, inhibits seedhead formation; also controls some broadleaf weeds.

- Paclobutrazol (Clipper, O.M. Scott's TGR): new growth regulator for both cool- and warm-season grasses; good residual control of shoot growth, but does not suppress seedheads; foliar and root absorbed; does not restrict roots or rhizomes; also provides some broadleaf weed suppression; will gradually reduce *Poa annua* in perennial turfs; yellowing of leaf blade tips four to six weeks after application possible; Scott's TGR is a granular formulation, which also provides nitrogen fertilization.

- Flurprimidol (Cutless): very new growth regulator, not yet available commercially; effects on turfgrass very similar paclobutrazol.

In general, plant growth regulators can be helpful in managing turfgrasses, but they should be used with caution and should be selected carefully to match the situation involved. They are still not recommended for high quality turf situations, except for edging and difficult-to-mow areas. Plant growth regulators inhibit the renewal process of grass plants. This can lead to increased disease, insect, and traffic problems and result in lower turf density.

—Banko and Stefani □