



By Erik Runkle



The ABCs of PGRs

There's been a recent flurry of activity in the world of plant growth regulators, from new active ingredients to alternative formulations of established products.

Many new plant growth regulators (PGRs) have entered the greenhouse production market in the past two years. A few of these contain new active ingredients, while many are alternative formulations of long-standing products. All of these products either inhibit the natural biosynthesis of a plant hormone or increase the levels of a hormone by their application.

This table contains products that are labeled for greenhouse crop production of herbaceous ornamental plants in most (if not all) of the United States, and usually also in Canada. Most of them can inhibit stem extension — although some promote stem extension — another can stimulate lateral branching and another can abort flowers. Research at Michigan State University and other university trials have shown that

plants respond similarly to products with the same active ingredient (AI). For example, Citadel applied at 1,000 ppm will have the same effect on geranium as the same rate of Cycocel because they both contain chlormequat chloride.

Daminozide and Chlormequat Chloride

Products with these AIs are usually applied as foliar sprays to provide shorter-term inhibition of stem extension. They are particularly desirable for use on plugs and crops that require only a small or moderate effect on plant height.

Ancymidol, Flurprimidol, Paclobutrazol and Uniconazole

These AIs can be used as sprays, sponches, liner dips or drenches and are listed in approximate order of increasing strength and residual activity. In other words, products that contain ancymidol have a moderate effect on inhibiting stem extension, while those that contain uniconazole can elicit the strongest, longest-lasting response.

GA₃ and GA₄₊₇ + Benzyladenine

These products are primarily used as sprays to promote stem extension or to suppress lower-leaf yellowing, such as on Easter lily and geranium. Products that contain gibberellic acid (GA) can be used to help overcome a PGR overdose. Generally, GA₃ has a stronger effect at increasing stem elongation than GA₄₊₇ at the same rate.

Ethephon

This AI releases the gas ethylene, which can inhibit stem extension, abort flowers and flower buds, and sometimes increase branching. It can be used to maintain vegetative stock plants and liners and to delay flowering of young plants. Industry experts have recently reported that ethephon is effective as a drench, but little information is available on this application strategy.

Benzyladenine (BA)

This AI, particularly without GA, can be used to stimulate lateral branching and, in a few cases, flowering. We're still learning about how to use this PGR in floriculture, but it looks particularly promising at stimulating branching of young perennials.

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Chemical	Active ingredient	Company	REI (hours)
Abide	ancymidol	Fine Americas	12
A-Rest	ancymidol	SePRO	12
B-Nine	daminozide	OHP	24
Bonzi	paclobutrazol	Syngenta	12
Chlormequat E-Pro	chlormequat chloride	Etigra	12
Citadel	chlormequat chloride	Fine Americas	12
Concise	uniconazole	Fine Americas	12
Configure	benzyladenine	Fine Americas	12
Cycocel	chlormequat chloride	OHP	12
Dazide	daminozide	Fine Americas	24
Downsize	paclobutrazol	Greenleaf Chemical	12
Fascination	GA ₄₊₇ + benzyladenine	Valent USA	4
Florel	ethephon	Monterey	48
Florgib	GA ₃	Fine Americas	12
Fresco	GA ₄₊₇ + benzyladenine	Fine Americas	4
Gibberellic Acid	GA ₃	Greenleaf Chemical	12
Paczol	paclobutrazol	OHP	12
Piccolo	paclobutrazol	Fine Americas	12
ProGibb T&O	GA ₃	Valent USA	12
Sumagic	uniconazole	Valent USA	12
Topflor	flurprimidol	SePRO	12

Summary of common plant growth regulators labeled for greenhouse production of ornamental crops in the United States and, in most cases, Canada. The product name, active ingredient, marketing company and re-entry interval (REI) are provided.