

SULFONYLUREAS

Important Members (Table 25)

Table 25. Important members of the sulfonylureas family.

Common Name	Trade Name(s)	Manufacturer	Water Solubility (ppm)	Vapor Pressure (mm Hg @ 20-30° C)
Sulfometuron	Oust	DuPont	8 (pH 5) 70 (pH 7)	6.0×10^{-6}
Metsulfuron	Ally, Escort DMC Weed Control	DuPont O.M. Scott	1100 (pH 5.4) 9500 (pH 6.7)	5.8×10^{-5}
Chlorsulfuron	Lesco TFC Glean, Telar	Lesco DuPont	60 (pH 5) 7000 (pH 7)	4.6×10^{-6}
Chlorimuron	Classic	DuPont	11 (pH 5) 1200 (pH 7)	4×10^{-12}
Bensulfuron	Londax	DuPont	3 (pH 5) 120 (pH 7)	2.1×10^{-14}
Thiameturon	Harmony	DuPont	260 (pH 5) 2400 (pH 7)	1.3×10^{-10}
Halosulfuron	Manage	Monsanto	15 (pH 5)	2.8×10^{-2}

Uses

The sulfonylureas are a recently marketed family of herbicides with many additional members currently being evaluated. **Sulfometuron** is used for bahiagrass seedhead suppression and bahiagrass and broadleaf weed control in rough bermudagrass. **Metsulfuron** is used in rough and fine turf for bahiagrass and broadleaf weed control. **Chlorsulfuron** provides broadleaf weed and tall fescue control in bermudagrass, bahiagrass, Kentucky bluegrass, fine fescue and bentgrass. **Chlorimuron** is used in soybeans for cocklebur, morningglory, Florida beggarweed, and sicklepod control. **Bensulfuron** is used for broadleaf and sedge control in rice production. **Thiameturon** is used for early postemergence broadleaf weed control in barley and wheat. **Halosulfuron** is an experimental herbicide that shows potential for nutsedge and selective broadleaf weed control in turf.

Behavior in Plants

Absorption

Most are rapidly absorbed by foliage and roots.

Translocation

All are mobile in plants and will move both acropetally and basipetally via xylem and phloem.

Selectivity and Degradation

Sulfonylureas are most active on broadleaf weeds at extremely low rates (0.25 to 1.5 oz/A). Bahiagrass and foxtail are two grass weeds also susceptible except for **chlorsulfuron**. Selectivity to the sulfonylurea herbicides is based on each plant's metabolism to nontoxic products. The sulfonylureas are metabolized to nontoxic products by tolerant plant species.

Mechanism of Action

Sulfonylureas inhibit the enzyme acetolactate (acetohydroxy acid) synthase (ALS) which is required for the biosynthesis of the branched chain amino acids valine, leucine, and isoleucine. This results in inhibition of cell division in the root and shoot tips. Growth inhibition is rapid while secondary symptoms include enhanced anthocyanin formation, abscission, vein discoloration, terminal bud death, chlorosis, and necrosis. Plant death is slow, requiring one to three weeks.