

**VALOR™ (FLUMIOXAZIN) HERBICIDE: A NEW
HERBICIDE FOR WEED CONTROL IN COTTON**

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Abstract

VALOR™ Herbicide (flumioxazin), formerly known as V-53482, is a new herbicide being developed by Valent USA Corporation for burndown and residual control of broadleaf weeds in cotton. Registrations are pending for soybeans and peanuts. It is also being evaluated for use in sugarcane and turfgrass. Flumioxazin is a N-phenylphthalimide derivative, which is a new chemistry for cotton. The mode of action of this family is inhibition of protoporphyrinogen oxidase (PPO). Porphyrins accumulate in susceptible plants causing photosensitization, which leads to membrane lipid peroxidation. The peroxidation of membrane lipids leads to irreversible damage of membrane function and structure in susceptible plants.

VALOR is applied with hooded or shielded sprayers or as a layby in cotton. It can also be applied in a stale seedbed (up to 2 weeks prior to cotton being planted). VALOR provides burndown of susceptible broadleaf weeds and nutsedge species as well as six to eight weeks residual control of broadleaf weeds. A non-ionic surfactant will be required for optimal efficacy.

VALOR degrades rapidly in water and soil. Dissipation occurs by a combination of hydrolysis and microbial oxidation. Although VALOR dissipates rapidly, discrete intermediates do not accumulate and the ultimate environmental products are incorporation into soil organic matter and carbon dioxide. Based on column leaching studies and the short aerobic soil half-life (11.9 to 17.5 days), the potential for VALOR or its degradation products to leach in field agricultural soils is low. The low use rate and rapid soil dissipation results in low carryover potential to rotational crops including tobacco, peanuts, corn, soybeans, and small grains.

Emerged broadleaf weeds and sedge species controlled by VALOR at 0.063 lb ai/A include carpetweed (*Mollugo verticillata*), common chickweed (*Stellaria media*), common cocklebur (*Xanthium strumarium*), common lambsquarters (*Chenopodium album*), common purslane (*Portulaca oleracea*), common ragweed (*Ambrosia artemisiifolia*), common waterhemp (*Amaranthus rudis*), entireleaf morningglory (*Ipomoea hederacea* var. *integriscula*), field bindweed (*Convolvulus arvensis*), Florida beggarweed

(*Desmodium tortuosum*), giant ragweed (*Ambrosia trifida*), hemp sesbania (*Sesbania exaltata*), ivyleaf morningglory (*Ipomoea hederacea*), jimsonweed (*Datura stramonium*), ladysthumb (*Polygonum persicaria*), Palmer amaranth (*Amaranthus palmeri*), Pennsylvania smartweed (*Polygonum pennsylvanicum*), pitted morningglory (*Ipomoea lacunosa*), prickly sida (*Sida spinosa*), purple nutsedge (*Cyperus rotundus*), red morningglory (*Ipomoea coccinea*), redroot pigweed (*Amaranthus retroflexus*), rice flatsedge (*Cyperus iria*), sicklepod (*Senna obtusifolia*), smooth pigweed (*Amaranthus hybridus* L.), spotted spurge (*Euphorbia maculata* L.), tall morningglory (*Ipomoea purpurea*), tall waterhemp (*Amaranthus tuberculatus*), velvetleaf (*Abutilon theophrasti*), Venice mallow (*Hibiscus trionum* L.), and yellow nutsedge (*Cyperus esculentus*). VALOR also provides residual control of all weeds previously mentioned except for field bindweed, rice flatsedge, sicklepod, and yellow and purple nutsedge. Based on field evaluations to date, VALOR will be an excellent new tool for weed control in cotton once registered.