

New pre-em mode of action delivers big shift in broadleaf weed control

Broadacre
21.02.2020



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Broadleaf weed control has until now relied heavily on a post-emergent pattern of control, so it might be difficult to imagine there's a better way.

Syngenta has developed CALLISTO® to control problem weeds in cereal crops before they become established, utilising a pre-emergent use pattern. This shift in thinking also brings with it some useful logistical benefits.

"The arrival of CALLISTO will give farmers and agronomists good reason to rethink early-season weed control," Syngenta Senior Product Lead Garth Wickson said.

"It's especially good news for farmers with problem weeds, high pressure, or logistical challenges in getting back across paddocks post-emergence."

CALLISTO is a new mode of action, now registered for pre-emergent control of Group B, C, D, F and I resistant weeds. The active ingredient, mesotrione, was synthesised from the roots of the Australian bottlebrush, *Callistemon citrinus*, after a Syngenta scientist noticed the absence of any weeds under one such shrub in his garden.

Mesotrione belongs to Group H, which has been the go-to mode of action for control of weeds like wild radish.

“Opinions are many, but the science tells us that shifting mesotrione into a pre-emergent use pattern delivers superior control of problem populations before these weeds are even able to mount a defence,” Garth said.

Making the shift to CALLISTO will come naturally to some, including those who are accustomed to using a product like BOXER GOLD® for annual rye grass control. As a side note, CALLISTO is compatible with BOXER GOLD, trifluralin and Sakura, for those considering one-pass, pre-emergent control of problem broadleaf and grass weeds.

The weeds CALLISTO will control, at a 100-200ml/ha rate, include Indian hedge mustard, wild radish, wild turnip, volunteer chickpeas, faba beans, field peas, lentils, vetch, capeweed, fleabane, lesser loosestrife, prickly lettuce, serradella, shepherd’s purse, sow thistle and sub clover.

In a pre-emergent pattern CALLISTO is primarily absorbed through the roots where it is translocated to the leaves. Mesotrione, being an HPPD inhibitor, works on these weeds by disrupting the development of plant pigments essential to photosynthesis.

If there are weed survivors, this is more likely to be in the seedling furrow where wheat and barley plants have been separated from the chemical. This is where a follow up application, with an alternative mode of action, would assist in preventing weed seed set.

Choosing the appropriate rate to apply CALLISTO will depend on factors including the target weed species, with the product having low and high label rates of 100ml/ha and 200ml/ha respectively.

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More than 80 replicated trials have demonstrated CALLISTO gives users up to 10 weeks of residual activity on weeds. There’s also been little lasting effect on emerging crops, especially when there’s good separation between the chemical and the germinating seed.

“Sowing systems that throw and maintain soil throw out of the seedling furrow will provide the best crop safety,” Syngenta Technical Services Lead James Considine said.

“Trials over six years, across Australia, demonstrated that well set-up and operated knife point, press wheel systems, which provide adequate soil throw out of the seed furrow, usually deliver good crop safety.”

Croplife Australia has cautioned farmers to reduce weed seed banks and seed set, particularly where Group H chemistry is used, to reduce selection pressure.

Considering this, James said CALLISTO was a smarter way to use Group H chemistry, which tended to face limitations in post-emergent applications.

“CALLISTO isn’t subject to the same efficacy limitations that farmers and agronomists have observed with post-emergent group-H products.”

These challenges have included ensuring adequate light intensity (crop shading), proper leaf coverage, compatibility, paddock access, time pressures and weed size.

“Pre-emergent use of CALLISTO ensures weeds are targeted when they are still small and at their most susceptible,” James said.

“Shifting to a group H in a pre-emergent pattern helps advisors avoid problems before they arise, and should form part of integrated weed management program, with CALLISTO substantially reducing weed populations requiring a post emergent application.”

In line with WeedSmart measures for integrated weed management, Syngenta encourages growers and their advisors to monitor for survivors and rotate to an alternative mode of action where further applications are necessary.

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