

# Guidelines without paraquat - Aug 2026

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| Spray method and application time                                               | Current situation and strategy with paraquat                                                                                                                                | Suggested alternative without paraquat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Challenges                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Boom sprayed in plant cane up to 3-4 leaf stage, in ratoon cane up to 10cm high | <b>Knockdown control only:</b><br>Paraquat 300-400 g a.i./ha (+ diuron, +2,4-D for improved weed control), (weeds < 5cm) in sugarcane plant and ratoon                      | <b>Knockdown control only (safe on cane)</b> <ul style="list-style-type: none"> <li>Asulam + 2,4D (or dicamba or fluroxypyr)</li> <li>Shallow tillage in plant cane and in ratoon on bare soil</li> </ul>                                                                                                                                                                                                                                                                                                                                | <b>Economic:</b> High cost of asulam<br><b>Technical:</b> Compatibility test between products required<br><b>Environmental:</b> Tillage - consider impact on soil structure, OC, sediment loss                                                                         |
|                                                                                 | <b>For weed pre-emergence + early weed post-emergence without affecting sugarcane:</b><br>Paraquat 300-400 g a.i./ha + Isoxaflutole (e.g. Balance) or imazapic (e.g. Spark) | <b>Early plant cane and ratoon pre-emergent:</b> <ul style="list-style-type: none"> <li>Isoxaflutole, imazapic or diuron <b>before cane spiking stage</b></li> <li>Amicarbazone (Amitron), <b>within 5 days of planting</b> or just after shoot emergence</li> </ul> <b>Ratoon only early pre-emergent:</b> <ul style="list-style-type: none"> <li>Barrage (diuron+hexazinone) or Bobcat imaxx (imazapic+hexazinone) <b>before cane emergence</b></li> <li>PalmeroTX (isoxaflutole+terbuthylazine) <b>before 2 leaf stage</b></li> </ul> | <b>Economic:</b> Cost depends on the choice of pre-emergent herbicide<br><b>Technical:</b> Timing is crucial to prevent crop damage. Refer to product label to check use restrictions.<br><b>Environmental:</b> PSII herbicides - consider impact on aquatic organisms |
|                                                                                 |                                                                                                                                                                             | <b>Pre-emergent (safe to apply over the cane) to apply before weed emergence:</b> <ul style="list-style-type: none"> <li>pendimethalin (Stomp), trifluralin (Treflan) or S-metolachlor (Dual Gold).</li> </ul>                                                                                                                                                                                                                                                                                                                           | <b>Economic:</b> Cost of pre-emergent herbicide<br><b>Technical:</b> Timely mechanical incorporation necessary in absence of irrigation / rainfall . Only applicable for bare soil                                                                                     |
|                                                                                 |                                                                                                                                                                             | <b>Pre-emergent and early post-emergent herbicides (weeds &lt; 4cm) safe to apply over the cane:</b> <ul style="list-style-type: none"> <li>atrazine,</li> <li>ametryn (more phytotoxic),</li> <li>metribuzin (cane &lt;3 leaf stage)</li> </ul>                                                                                                                                                                                                                                                                                         | <b>Economic:</b> Cost of pre-emergent herbicide<br><b>Technical :</b> Limited grass control especially for atrazine<br><b>Environmental:</b> PSII herbicides - consider impact on aquatic organisms                                                                    |

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| Spray method and application time                                              | Current situation and strategy with paraquat                                                                                                                                                                                                                                                                                                                                                                                  | Suggested alternative without paraquat                                                                                                                                                                                                                                                                                                                                                                                                                       | Challenges                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Directed spray in plant cane after 3-4 leaf stage and ratoon higher than 10 cm | <b>Knockdown control only:</b><br>Paraquat 300-400 g a.i./ha (+ diuron, +2,4D for improved weed control), (weeds < 5cm) in sugarcane plant and ratoon                                                                                                                                                                                                                                                                         | <b>Knockdown control only:</b> <ul style="list-style-type: none"> <li>Asulam or MSMA to control grasses (+2,4-D for broadleaves) in the row. Asulam is safe on cane but grasses need to be &lt; 25 cm. For MSMA, cane needs to be &gt; 50cm. Crop damage will occur</li> <li>Basta (or glyphosate) with shield in the interrow</li> <li>Basta directed spray just prior out-of-hand stage (plant cane), cane growing point min 20cm high (ratoon)</li> </ul> | <b>Economic:</b> Higher cost - can be reduced using shield or directed spray techniques<br><br><b>Technical:</b> use of shields, band spraying. High risk of toxicity on crop with glufosinate, glyphosate and MSMA and yield loss. Compatibility tests will be required |
|                                                                                | <b>For weed pre-emergence + early weed post-emergence without affecting sugarcane:</b><br>Paraquat 300-400 g a.i./ha + <ul style="list-style-type: none"> <li>imazapic (e.g. Spark)</li> <li>Bobcat i-MAXX (imazapic+hexazinone)</li> <li>Barrage (diuron+hexazinone)</li> <li>Balance (isoxaflutole)</li> <li>Valor (flumioxazin) for weed pre-emergence + early weed post-emergence without affecting sugarcane.</li> </ul> | <b>Pre-emergent and early post-emergent herbicides</b><br>(weeds < 4cm) safe to direct spray at the base of the cane stem: <ul style="list-style-type: none"> <li>Diuron, Barrage (low rate) or metribuzin</li> <li>Amitron directed spray if cane is &gt; 30 cm</li> <li>Flumioxazin (Valor) after fill-in in plant cane or in ratoon (need addition of post-emergent herbicide)</li> <li>Balance or PalmeroTX if cane is &gt;75 cm</li> </ul>              | <b>Economic:</b> Poor control on emerged weeds and follow-up knockdown herbicide necessary<br><br><b>Technical:</b> Refer to product label to check use restrictions. Compatibility tests may be required                                                                |
| Just before out of hand stage                                                  | Mixture with flumioxazin or Bobcat i-MAXX to be applied after fill-in in plant cane.                                                                                                                                                                                                                                                                                                                                          | <b>Pre-emergent and post-emergent herbicides</b> <ul style="list-style-type: none"> <li>Imazapic or Bobcat iMaxx (imazapic + hexazinone) + Basta directed spray</li> </ul>                                                                                                                                                                                                                                                                                   | <b>Technical:</b><br>Compatibility test required<br>Risk of toxicity on crop and yield loss                                                                                                                                                                              |