



Resistance management recommendations and proposals for fungicides not included in current working groups as requested by manufacturers

COMPOUND (ISO common Name)	Zoxamide
FRAC GROUP	Group 22
GROUP NAME	Benzamides & thiazole carboxamides
MODE OF ACTION GROUP	B: Cytoskeleton & motor protein
TARGET SITE AND CODE	B3: β -tubulin polymerization
Uses	Control of oomycetes and certain ascomycetes in various crops, including banana, potato and vine.
Resistance Status	<i>Plasmopara viticola</i> : Single cases of target site mutation reported. Details still under evaluation. <i>Phytophthora infestans</i> , <i>Mycosphaerella fijiensis</i> , <i>Bremia lactucae</i> , <i>Pseudoperonospora sp.</i> , <i>Peronospora sp.</i> : No mutations or changes in sensitivity detected.
Resistance Mechanism	For <i>Plasmopara viticola</i> only: Still under evaluation but a possible target site mutation in the microtubule gene (C239)
Recommendations	General Recommendations: Only apply zoxamide containing products in a preventative manner. Apply zoxamide containing products only in mixtures (ready mix or tank mix) with an effective partner against the disease from a different FRAC Group. Respect the label recommended rates of zoxamide based products and partner products. To reduce selection pressure, use zoxamide based products in alternation with products that have a different mode of action (from a different FRAC group), preferably those with multi-site activity. Always follow product specific recommendations for resistance management. <i>Important: Resistance management strategies might differ in regions or countries because of different disease pressure or national guidelines/ regulations.</i>



	<p>Specific Recommendations for Grapes:</p> <p>Apply a maximum of 4 applications of zoxamide based products per season with no more than a total of 2 applications applied consecutively.</p> <p>Specific Recommendation for Bananas:</p> <p>Zoxamide containing products should be applied according to the following guidelines against <i>Mycosphaerella fijiensis</i> in banana:</p> <p>Applications containing zoxamide fungicides should preferably start at the onset of the annual disease progress curve and be applied at times of lower disease pressure.</p> <p>No consecutive zoxamide applications should be made.</p> <p>Apply a maximum of 4 applications containing zoxamide containing products but not more than 33% of the total number of sprays.</p> <p>Applications should be separated by at least 3 months of a zoxamide-free period.</p> <p>Specific Recommendations for Potatoes</p> <p>Do not exceed a maximum of 6 applications or 50% of the intended number of applications per crop cycle, whichever is lower, of zoxamide containing products.</p> <p>Apply no more than 2 consecutive applications of zoxamide containing products.</p> <p>Specific Recommendations for Vegetables</p> <p>Do not exceed a maximum of 4 applications of zoxamide containing products per crop cycle.</p> <p>Apply no more than 2 consecutive applications of zoxamide containing products.</p>
Requested by / date Last Revision	Gowan Group / April 2023
FRAC SC approval / date	FRAC SC / April 28, 2023