Resistance management recommendations and proposals for Fungicides not included in current working groups

Compound	Fludioxonil, (Fenpiclonil)
Chemistry	Phenylpyrroles (PP)
FRAC MoA Code	12
TARGET SITE & CODE	E2: osmotic signal transduction, MAP / histidine- kinase (os-2, HOG1)
Uses	• Foliar applications: *Botrytis* spp. on grape, berries, cucumber, tomato, peas, beans, lettuce and ornamentals; *Sclerotinia sclerotiorum* on peas, beans and leafy vegetables, oil seed rape; *Alternaria* spp. on pome; Turf diseases such as *Microdochium nivale*, *Typhula* spp., *Rhizoctonia* spp, *Colletotrichum graminicola* • Seed treatment: *Microdochium nivale*, *Fusarium* spp. • Post-harvest: *Botrytis cinerea*, *Penicillium* spp., *Monilinia* spp., *Gloeosporium*.
Resistance Status	• Low to Medium risk. • Resistance found sporadically; mechanism speculative • Some species are naturally tolerant • Reduced sensitivity has been detected with no practical consequence in the field (grape) • Main resistance mechanism based on efflux pumps: Multi Drug Resistance (MDR) • Resistance management is required. • Monitoring programs are regularly conduced to assess sensitivity in some target species
Resistance Mechanism	• MDR or HOG1 alterations
Recommendations*	**<u>For foliar application:</u>** **Grape, fruits & vegetable crops for *Botrytis* as a lead pathogen:** • Apply PP preventatively & limit the number of sprays • If 2 to 5 applications for *Botrytis* control: apply 2 PP maximum, consecutively only if mixed with a different robust partner having a different MoA for each application • If 6 or more applications: apply 3 PP maximum. Strict alternation with a different robust MoA if PP is applied solo and maximum of 2 consecutive applications in case of pre or tank mix with a robust partner of different MoA. **Other pathogens and crops:** Apply PP preventatively & limit the number of PP sprays to 50% max of spray program for the targeted pathogen. Strict alternation if PP is applied solo and maximum of 2 consecutive applications in case of pre or tank mix with a robust partner. **Ornamental crops for *Botrytis* as a lead pathogen:** • Apply PP fungicides preventatively and in rotation with fungicides from a different cross-resistance group with satisfactory efficacy against *Botrytis*. If used solo, strict rotation is required. If used in mixture, apply PP fungicides in a max. of 2 consecutive applications. • Limit the number of PP applications for Botrytis control to max. 1 appl. of 1-3 total appl., max. 1/3 of 4-11 total appl., max. 4 appl. of 12-20 total appl. and max. 1/5 of >20 total appl. **Turf & Landscapes:** Apply preventatively, when conditions are favorable for disease development**.** For overwintering diseases, apply with mixing partner just before snow cover. **<u>For Post-harvest:</u>** Post-harvest applications are not considered as part of the foliar applications if the treated material is separated from the field. To avoid resistance issues within the post-harvest facility, implement high standards of hygiene measures such as regular sanitization of the facilities and appropriate disposal of infected material. **<u>For seed treatment:</u>** Resistance risk is low. Seed application is not considered as part of the number of applications. ***** Regional/local FRAC recommendations may be more restrictive
Requested by / date	Helge Sierotzki, Stefano Torriani, Thierry Querol, Syngenta Crop Protection, 18th June 2020
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