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TRITICONAZOLE

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Rapporteur Member State: Austria
Co-Rapporteur Member State: United Kingdom

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When	What
2003/ September	Initial DAR, first version
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B.3. DATA ON APPLICATION

B.3.1. USE OF THE ACTIVE SUBSTANCE

Triticonazole is a contact and systemic fungicide, used as seed treatment against seed and soil borne diseases such as *Tilletia* spp., *Ustilago* spp., *Fusarium* spp. in cereals.

B.3.2. FUNCTION

Triticonazole (BAS 595 F) acts as a contact and systemic fungicide.

B.3.3. EFFECTS ON HARMFUL ORGANISMS

Triticonazole is used as a seed treatment in agriculture for the control of fungal diseases in cereals such as wheat, barley, triticale, rye and oat.

B.3.4. FIELD OF USE ENVISAGED

Triticonazole is used as a seed treatment in agriculture for the control of fungal diseases in cereals such as wheat, barley, triticale, rye and oat.

B.3.5. HARMFUL ORGANISMS CONTROLLED AND CROPS OR PRODUCTS PROTECTED OR TREATED

Triticonazole is used to control a range of seed and soil borne diseases such as *Tilletia* spp., *Ustilago* spp., *Fusarium* spp. in cereals.

B.3.6. MODE OF ACTION

Triticonazole is active as a contact and systemic fungicide seed treatment; target fungal pathogens are killed or supressed. It shows an apoplastic (upwards) distribution inside the plant after penetration.
As with most of the methyl-triazol derivatives, triticonazole acts as a C-14 demethylation inhibitor in the sterol biosynthesis pathway found in most of the fungi except Oomycetes. When applied onto plants, triticonazole is effective against a broad range of fungi belonging to several groups of plant pathogens (Ascomycetes, Adelomycetes, Basidiomycetes) It is active as a contact and systemic fungicide. It shows an apoplastic (upward) distribution inside the plant after penetration. When applied as a seed treatment, the product is slowly absorbed by the seedlings through the seed, teguments and the root.

B.3.7. INFORMATION ON THE OCCURRENCE OR POSSIBLE OF THE DEVELOPMENT OF RESISTANCE AND APPROPRIATE MANAGEMENT STRATEGIES

Triticonazole should present the same cross-resistance patterns as other sterol demethylation inhibitor (DMI) fungicides. A resistance risk analysis was conducted in 2013. No reports on a reduced sensitivity to demethylation inhibitors (DMIs) for the target pathogens exist at the current time. There is no cross-resistance within the SBI-group, i.e. between morpholines and DMI fungicides. Likewise there is no cross resistance or a

correlation in the sensitivity to SBI fungicides and other modes of action. Baseline data are not available. No monitoring data and no reports on field failure are available for the target pathogens. The FRAC (Fungicide resistance action committee) working group described the DMI-fungicides in general as medium-risk compounds. The pathogen risk is assessed as follows:

- Low risk pathogens: *Tilletia caries, Ustilago nuda, Pyrenophora graminea*
- Medium risk pathogens: *Microdochium spp., Fusarium spp.*.

The combined resistance risk of *Pyrenophora graminea, Tilletia caries, Ustilago nuda* and DMIs is concluded to be low and that of *Microdochium spp.* and *Fusarium spp.* and DMIs to be medium. For common bunt (*Tilletia caries*) and loose smut (*Ustilago nuda*) resistance development would only have consequences if it developed in a crop destined for seed production. Development of resistant isolates in a food crop would be inconsequential because the resistant propagules would be removed from the population at harvest. This further lowers the chances of resistance becoming a problem.

The objective of anti-resistance management strategies is the reduction of selection pressure to avoid or delay the occurrence of resistance. This can be achieved by good agricultural practice, which leads to less infection pressure (e.g. phytosanitary measurements, cultivation of less susceptible varieties, appropriate crop cultivation unfavorable for the target pathogens). Another important resistance management strategy is the restriction of use. By their very nature, cereal seed treatments are only applied once per season.

Since population size of pathogens is lower at disease onset than when already established in the field, selection pressure is less when using preventive applications rather than curative or eradicative spray schemes. A seed treatment is the most preventive application that can be made. This is from a resistance management point of view an optimal timing that is also an effective resistance management (van den Berg et al. 2013).

The applicant BASF is a member of the FRAC SBI Working Group and will promote effective anti-resistance management strategies.

Summary information on triticonazole

Triticonazole	
IUPAC name:	rac-(5*E*)-5-(4-chlorobenzylidene)-2,2-dimethyl-1-(1*H*-1,2,4-triazol-1-ylmethyl)cyclopentanol
Chemical group:	Triazole
Mode of action:	Blocking of ergosterol biosynthesis leading to inhibition of growth and cell membrane disruption
Plant translocation:	Systemic, shows an apoplastic (upwards) distribution inside the plant after penetration.
Biological action: Harmful organism, plant growth regulator, etc.	Acts as a contact and systemic fungicide against seed and soil-borne diseases of cereals

B.3.8. REFERENCES RELIED ON

Data Point	Author(s)	Year	Title Compagny Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Data protection claimed Y/N	Justification if data protection is claimed	Owner	Previous evaluation
-	-	-	-	-	-	-	-	-