



Azanaphthalene (AZN) Working Group

Annual Meeting April 5th 2018

Protocol of the discussions and recommendations of the AZN Working Group of the Fungicide Resistance Action Committee (FRAC)

Participants

Greg Kemmitt (Chairman)	Corteva Agriscience, UK
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Venue:
Teleconference

1. Resistance Monitoring 2017

1.1 Wheat powdery mildew (*Blumeria graminis* f.sp. *tritici*) (Results generated by DuPont for proquinazid)

Routine monitoring for quinoxyfen was started using airborne spore trapping in 1996 and was discontinued in 2006. Isolates with reduced sensitivity to quinoxyfen were first detected in Northern Germany in 2001 and a year later in France and the UK. The frequency of these isolates was seen to vary significantly between monitored regions within countries and also from year to year over the period of monitoring from 2002 – 2006.

Routine monitoring for proquinazid has been conducted annually since 2006 in UK, France, Germany, Poland, Czech Republic, Hungary, Italy and Sweden.

Isolates able to grow in the laboratory at a discriminatory dose of proquinazid controlling baseline isolates have been found at levels which vary between regions and seasons.

Where isolates are sometimes found one year growing at the discriminatory dose, they may not be detected in that region the following year.

No routine monitoring was conducted in 2017.

In 2017, commercial field performance with proquinazid was good and there were no complaints.

1.2 Grape powdery mildew (*Erysiphe necator*)

(Results generated by DuPont, Dow)

Monitoring has been conducted on an annual basis in Germany, Austria, Switzerland, France, Italy, Romania, Hungary, Spain and Portugal since 2003 for quinoxifen and since 2007 for proquinazid.

No significant change of overall EU wide sensitivity of the population was recorded in 2017 compared to 2016.

As in previous years, adapted isolates able to grow actively at a discriminatory dose of either proquinazid or quinoxifen which controls baseline isolates have been detected across Europe. The frequency of these isolates has been seen to vary significantly between monitored regions within countries and also from year to year over the period of monitoring from 2003 – 2017. The degree of adaptation from low to moderate to high as classified according to level of growth observed at the discriminatory test doses is also seen to vary across countries and within regions from year to year.

In 2017, strongly adapted isolates were found mostly at low frequencies in the Trentino, Sudtirol, and Veneto regions of Italy; the Champagne region of France; the Wachau region in Austria; in Eastern Hungary and in the Mosel, Rheinhessen, Neckar, Pfalz, Baden Breisgau, Nahe and Würzburg regions of Germany.

In 2017 strongly adapted isolates were not detected in the Emilia Romagna, Tuscany, and Lombardy, regions in Italy; the Bordeaux, Loire, Gascony/Armagnac, Rhône Burgundy and Languedoc, regions in France; the Weinviertel and Burgenland region in Austria; the lake Geneva and Montey area of Switzerland; the Ribatejo and Alentejo region in Portugal and the Andalucia, Valencia Catalonia and Rioja regions of Spain.

1.3 Cucurbit powdery mildew (*Podosphaera fusca*)

A quinoxyfen sensitivity baseline was established using isolates collected between 2002 and 2004 in Southern Spain prior to the commercial launch of quinoxyfen in cucurbits in 2006.

No monitoring was conducted in 2017. Field performance remains as expected when the product is used according to label recommendations.

2. Use Recommendations

2.1 Recommendations for cereals

- Apply Group 13 fungicides preventatively.
- Apply a maximum of 2 Group 13 fungicides containing sprays per crop solo or in mixture (co-formulations or tank mixes) with effective mixture partners from different cross-resistance groups.
- If a second application is needed, it should be in tank-mix with an effective powdery mildewicide with another mode of action.
- Always follow product specific label recommendations for resistance management.

2.2 Recommendations for grapes

- Apply Group 13 fungicides preventatively.
- Group 13 fungicides must be applied in spray programs with fungicides of a different mode of action.
- Apply a maximum of 3 Group 13 fungicide containing sprays per season, solo or in mixture (co-formulations or tank mixes) with effective mixture partners from different cross-resistance groups.
- Do not exceed 2 consecutive applications of Group 13 fungicides per season.
- Always follow product specific label recommendations for resistance management.

2.3 Recommendations for cucurbits, fruiting vegetables and strawberries

- Apply Group 13 fungicides preventatively.
- Group 13 fungicides must be applied in spray programs with fungicides of a different mode of action.
- The number of sprays of group 13 fungicides per crop should not exceed 50% of the total number of powdery mildew sprays per season, solo or in mixture (co-formulations or tank mixes) with effective mixture partners from different cross-resistance groups.
- Do not exceed 2 consecutive applications of Group 13 fungicides per season.
- Always follow local product specific label recommendations for resistance management.