



STEROL BIOSYNTHESIS INHIBITOR (SBI) WORKING GROUP

**Annual Meeting 2009 on December 04, 2009, 08:30 – 15:30 -
Protocol of the discussions and recommendations of the SBI
working group of the Fungicide Resistance Action Committee
(FRAC)**

Participants of the SBI WG Meeting on December 04, 2009

BASF	Martin Semar Gerd Stammler
Bayer CropScience	Thierry Gestat de Garambe Andreas Mehl Klaus Stenzel
Du Pont	Jean-Luc Genet
Makhteshim Agan	Renato Castagna
Syngenta	Luc Henry Andy Leadbeater Helge Sierotzki

Members of the WG SBI not participating

Dow	Greg Kemmitt
Du Pont	Robert Bird
Isagro	Oswaldo Puppim

Venue of the meeting: Lindner Hotel & Residence Main Plaza, Frankfurt
Hosting organization: FRAC

1. DMI AND AMINES : CEREAL DISEASES

1. 1. WHEAT

1.1.1. Leaf Spot (*Mycosphaerella graminicola* / *Septoria tritici*)

Presentation of monitoring data: BASF, Bayer CropScience, Makhteshim Agan, Syngenta

- Disease pressure in 2009 in Europe was low to moderate.
- DMI's field performance was good when used according to the manufacturers and FRAC recommendations. No field resistance has been reported.
- After the slight increase in the frequency of less sensitive isolates from 2002 to 2004, the situation has stabilised between 2005 and 2008. In 2009 a trend to slightly higher EC₅₀ values was observed in important cereal growing areas (UK, F, D, IRL). A few outliers with higher EC₅₀ values in lab tests were detected in 2009 as in the previous years.

1.1.2. Powdery mildew (*Blumeria graminis f.sp. tritici* / *Erysiphe graminis f.sp. tritici*)

In 2009 the disease pressure was low to moderate across Europe.

DMI's

Presentation of monitoring data: Bayer CropScience

- DMI field performance was good.
- Sensitivity data being presented confirmed that the situation was generally stable remaining in the range of variability seen over the past 10 years.

Amines

Presentation of monitoring data: BASF, Bayer CropScience, Syngenta

- Field performance of amine based products was good.
- Sensitivity data being presented confirmed that like with DMI's the situation was stable remaining in the range of variability seen over more than 10 years.

1.1.3. Wheat brown rust (*Puccinia triticina*)

Presentation of monitoring data: BASF, Bayer CropScience

- Brown rust disease pressure was moderate across Europe.
- Field performance of DMI's against rust has been maintained.
- Sensitivity data from 2009 for wheat brown rust showed that the sensitivities in 2009 were in the range of those of the last years.

1.1.4. Eyespot (*Tapesia spp, syn. Oculimacula spp.*)

Presentation of monitoring data: Bayer CropScience

- Sensitivity data have been presented for Prothioconazole (W and R types). Between 2003 and 2009 there is no change in the sensitivity of both types, stable situation has been observed during the last 7 years. Resistance factors are low.

1.1.5. DTR / HTR (*Pyrenophora tritici-repentis*)

Monitoring has been carried out in 2009, results are not available yet.

1.2. BARLEY

1.2.1. Powdery Mildew (*Blumeria graminis f.sp. hordei / Erysiphe graminis f.sp. hordei*)

In 2009, disease pressure was moderate.

DMIs

Presentation of monitoring data: Bayer CropScience

- DMI products performed well.
- The sensitivity of the populations stayed in the range observed in the previous years.

Amines

Presentation of monitoring data: Bayer CropScience, Syngenta

- Amine products performed well.
- The sensitivity of the populations stayed in the range observed in the previous years.

1.2.2. Scald (*Rhynchosporium secalis*)

Presentation of monitoring data: BASF, Bayer CropScience, Du Pont, Syngenta

- Disease pressure was moderate in Europe in 2009.
- Field performance was good.
- Generally stable situation. Sensitivity monitoring data were presented for 2009: the sensitivity of the populations stayed in the range observed in the previous years.

1.2.3. Net Blotch (*Pyrenophora teres* /*Drechslera teres*)

Presentation of monitoring data: Bayer CropScience, Du Pont, Syngenta

- Disease incidence was moderate in 2009.
- Field disease control was good.
- The sensitivity of the populations in 2009 stayed in the range observed in the previous 10 years.

1.3. GENERAL RECOMMENDATIONS FOR CEREALS (DMI'S AND AMINES)

The recommendations for the use of DMI and amine fungicides in mixture or alternation programmes with different mode of action fungicides remain unchanged.

Repeated application of DMI or amine fungicides alone should not be used on the same crop in one season against risky pathogens (e.g. cereal powdery mildews, barley net blotch, scald) in areas of high disease pressure for that particular pathogen.

Reduced rates of DMI's have been shown to accelerate the shift to less sensitive populations. It is critical to use effective rates of DMI's in order to ensure robust disease control. DMI's must provide effective disease control and be used at manufacturers recommended rates.

When used in mixture recommended effective rates of the SBI should be maintained. Split and reduced rate programmes, using multiple repeated applications at dose rates below manufacturers recommendations, provide continuous selection pressure and accelerate the development of resistant populations, and therefore must not be used.

To ensure good performance in situations of high disease pressure it is of importance to adhere to dosages and spray timings as recommended by manufacturers. Highly curative applications should be avoided. Application timing has to be appropriate to all mix partner's characteristics. Mixing with a non-cross resistant fungicide at effective dose rates may contribute to a higher level disease control.

The amine fungicides are effective non-cross-resistant partner fungicides for DMI's on cereals for the control of pathogens included in the label recommendation of each respective product.

2. DMI AND AMINES: INDUSTRIAL CROPS

2.1. SOYBEAN:

Asian soybean rust (*Phakopsora pachyrhizi*)

Presentation of monitoring data: Bayer CropScience, Syngenta

- A sensitivity baseline has been established in Brazil based on 2005/6 data.
- Extensive monitoring was carried out in 2007/8 and 2008/9 across the country.
- The performance of DMI's used alone was reduced under extreme disease pressure situations especially under curative application timings and/or extended spray intervals.
- Sensitivity shifts have been observed. Variations were also found related to sampling timing and regional differences.

Recommendations for Asian soybean rust:

Refer to the general recommendations for SBI's.

In addition to ensure robust disease control it is essential to

- Apply preventively or as early as possible in the disease cycle
- Apply DMI fungicides always in mixtures with effective non-cross resistant fungicides. Refer to manufacturers recommendations for rates.
- Apply DMI fungicide containing products always in intervals recommended by the manufacturers and adjusted to the disease epidemics. Avoid extended spray intervals.

2.2. OILSEED RAPE - *Leptosphaeria maculans* (*Phoma lingam*)

Presentation of monitoring data: BASF, Bayer CropScience

- Monitoring data from 2006 to 2008 showed a narrow sensitivity range, no indication for reduced sensitivity. Studies on 2009 samples are ongoing.

For recommendations see General Recommendations.

2.3. OILSEED RAPE - *Sclerotinia sclerotiorum*

Presentation of monitoring data: BASF

- Monitoring data from 2008 showed no indication for reduced sensitivity. Studies on 2009 samples are ongoing.

For recommendations see General Recommendations.

3. DMI AND AMINES: OTHER CROPS

3.1. GRAPE VINE:

Powdery Mildew on grape vine (*Erysiphe necator*)

Monitoring data for 2008 were presented by Bayer CropScience. Studies for 2009 are ongoing.

- For 2008: Disease pressure was variable across Europe with high levels reported in Italy, Switzerland, Austria, Hungary and Germany.
- Performance of DMI's and amines was as expected.
- Stable situation for the amines over the last years. Sensitivity for DMI's was generally in the normal range of fluctuation. In Germany higher resistance factors are observed in 2008, in other regions especially in northern Italy where 2007 a similar effect was observed, the sensitivity reverted back.

Recommendations:

- DMI's and amines should be used preventative and curative situations should be avoided.
- The existing strategy for effective disease control and resistance management continues to be successful and the use recommendation is a maximum of 4 applications per season. The strategy includes the use of mixtures or alternation with non-cross resistant fungicides.
- To ensure that SBI's can remain the effective basis for control of *Erysiphe necator* in grape vine, their use should adhere to the full recommended rate (either alone or in mixture) at the recommended timing and application volume and an accurate treatment of each row.

3.2. APPLE:

3.2.1. Apple Scab (*Venturia inaequalis*)

Monitoring data for 2009 were presented by Syngenta.

- Disease pressure was low to high across Europe.
- The performance of DMI's was good on this disease in 2009 when compounds were used according to the manufacturers' and FRAC recommendations within spraying programmes.
- No sensitivity changes in European populations were observed compared to previous years, proportion of less sensitive isolates is low and stable.

Recommendations:

- DMI fungicides are not recommended for season long use and a maximum of 4 DMI sprays either alone or in mixture is recommended.
- DMI's should be used in mixtures or (block) alternations with a non-cross resistant fungicide. Application of recommended label rates is important.
- Preventative applications should always be the first choice with DMI's. Curative applications are only recommended when accurate disease warning systems are available.

3.2.2. Powdery Mildew on apple (*Podosphaera leucotricha*)

No monitoring in 2009

- The performance of DMI's was good when compounds were used according to the manufacturers' recommendations and FRAC recommendations.
- See General Recommendations.

3.3. BANANA:

Banana Sigatoka (*Mycosphaerella fijiensis*)

The conclusions and guidelines of the February 2008 meeting of the FRAC Banana Working Group are available on the FRAC Website (<http://www.frac.info/frac/index.htm>). The next meeting of the group is planned for March 10 - 11, 2010.

4. SBI-CLASS III (HYDROXYANILIDES: Fenhexamid)

***Botrytis cinerea* on grape vine**

- Disease pressure was low across Europe in 2009. Field performance was good.
- Resistant isolates were detected in Europe, but with stable and low frequency over the last years not affecting the field performance.

Recommendations for the use of Fenhexamid

- Use Fenhexamid only protectively.
- Solo product:
Spray programmes with a maximum of 3 treatments per season: max. 1 application with Fenhexamid
Spray programmes with 4-5 treatments/season: max. 2 applications with Fenhexamid
Spray programmes with 6 and more treatments: at the maximum one third of all Botryticide-applications

- Mixtures
Both partners - if applied alone at the dose used in the mixture - must have sufficient activity against Botrytis. Not more than 50% of all Botrycide-treatments should be made with Fenhexamid-containing mixtures.

4. NEXT MEETING

Next annual meeting is planned for December 03, 2010.